The
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AND SHIPBUILDING & MARINE ENGINEERING NEWS

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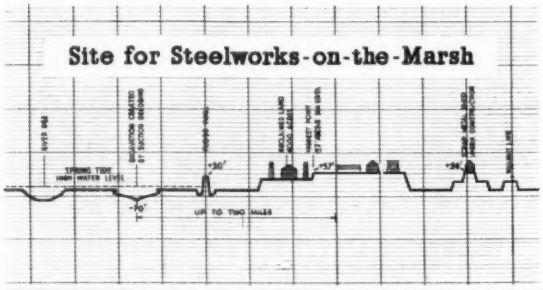

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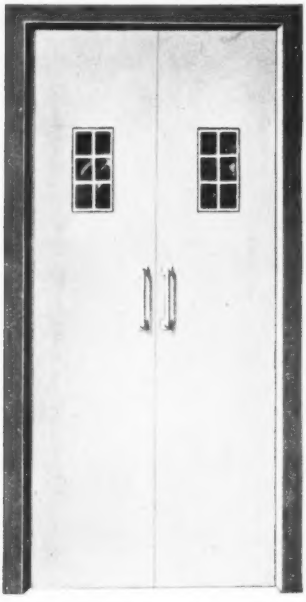
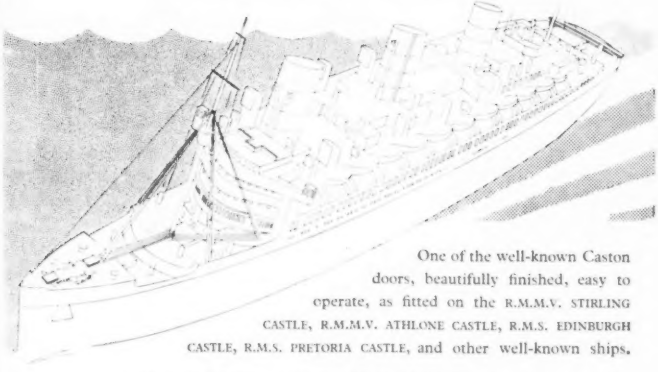


THE *Non-Slam* BI-PARTING DOOR
FOR THE LUXURY LINER



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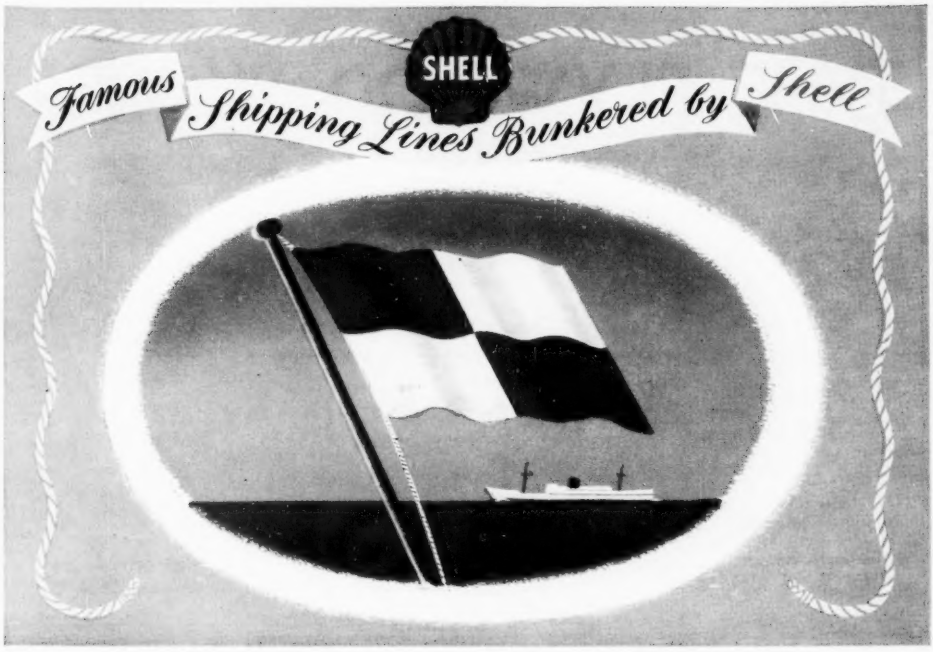

COMPANHIA NACIONAL DE NAVEGAÇÃO

The Portuguese company Empresa Nacional de Navegação began business in 1881 with two vessels, each of 1,200 tons, and with the intention of establishing improved communication between Angola—Portuguese West Africa — and Europe. Trade developed rapidly and soon their routes took in Portuguese Guinea and were extended beyond the Cape of Good Hope to the African east coast. In 1913 they owned 31 vessels totalling 87,000 tons, of which 50,000 tons were reserved exclusively for the African trade.

In 1918, the Empresa Nacional changed its name to Companhia Nacional de Navegação. In 1936, Professor Rui Ulrich, now Portuguese Ambassador to the United Kingdom, was appointed general manager of the board of directors, and under its new administration C.N.N. modernised its fleet.

The Portuguese Ministry of Marine in 1945 introduced a plan for the "renovation" of the Portuguese merchant fleet and Companhia Nacional de Navegação, using its own financial resources almost throughout, put on order five ships. Now under construction to their order in the United Kingdom are the vessels *India* and *Timor*, each of 9,000 tons deadweight.

Total ownings of this Company exceed 200,000 deadweight tons actually in service and not including small craft. Their routes extend to all parts of the Portuguese Empire.

SHELL WORLD WIDE BUNKERING SERVICE

Remembrance Day

SATURDAY NOV. 10th

They shall grow not old, as
we that are left grow old.
Age shall not weary them, nor
the years condemn;
At the going down of the sun
and in the morning
We will remember them.

Laurence Binyon

PLEASE GIVE GENEROUSLY

The SHIPPING WORLD

AND SHIPBUILDING & MARINE ENGINEERING NEWS

The Oldest Weekly Journal devoted to Shipping, Shipbuilding, Marine Engineering, Shiprepairing, Insurance and Finance

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THE SHIPPING WORLD

A NEW ORDER IN INDUSTRY

"THE Lord Leathers took the Oath and kissed hands upon his appointment as one of His Majesty's Principal Secretaries of State." That announcement in the *London Gazette* revealed that the new Prime Minister agrees with Rudyard Kipling that civilisation is a matter of communications. Lord Leathers will bring his remarkable administrative skill and business experience to bear on a series of very complicated problems, in the solution of which he will have the aid of a group of very able Civil Servants many of whom, like Lord Hurcomb, worked under him during the war when he was Minister of Shipping, *without* a seat in the Cabinet. Now he will be at Mr. Churchill's right hand, and the Government will gain in strength by this change. His task will be no enviable one, as he will be the coordinator of policy on railways, road transport, fuel and power, and apparently, of civil aviation. In order to ease his burden, Ministers have been appointed to take charge of the Fuel, Power and Transport departments, Mr. John Maclay having been selected to fill the last mentioned post. Though it has not been stated, Lord Leathers, of course, will be responsible for carrying out the pledge in the Conservative Party's statement of policy, issued on the eve of the General Election, which stated that "for civil aviation we favour a combination of public and private enterprise." How that promise will be carried out remains to be seen, but it is certain that private operators will be encouraged to develop their services, thus forming an invaluable reserve of machines and pilots in time of war.

With the aid of Lord Leathers, with his ripe experience of transport by sea, land and air, the whole field will, it may be assumed, be reviewed in order to promote both efficiency and economy, and there is undoubtedly need for both. Though Mr. Alfred Barnes did well at Berkeley Square, working amicably with the shipping industry, he had not the experience to enable him to carry out any scheme of coordination, and, if he had had that experience, it would have been difficult for him to make his influence felt since he was not a member of the Cabinet. From Mr. Attlee downwards, none of the Ministers had an adequate appreciation of the importance of transport, and particularly shipping, to an island people. Their ideas were not national but political. Their ultimate aim was to nationalise every industry in the country, not excluding shipping and shipbuilding, proceeding gradually in achieving their purpose. For the time, at least, the danger of further nationalisation of industry is at an end. There is reason to hope that the trade unions will realise that they are, in fact, in a stronger bargaining position under private enterprise than under any scheme of State ownership and control that has yet been devised.

It has been apparent for several years that Mr. Attlee and his colleagues, with their plans for bulk buying, rigid regulations, and endless forms, had little conception of the difficulties of long-sighted business men, who plan with knowledge and experience, rather than in accordance with the crazy principles of the School of Economics. Under conditions of greater freedom, this country can still achieve great things, for, though the Royal Navy is only a shadow of what it was, our shipping services, as well as those of banking and insurance, are supreme. What is the official policy? "Enterprise must not be frustrated and production limited by unnecessary restrictive practices, either of labour or of employers. Socialists denounce monopoly practices by private firms; this is indeed Satan rebuking sin. Action against undesirable restraints of trade is more likely to come from a government not committed to monopoly, as are the Socialists with their creed of nationalisation." It was also stated that Conservatives will strengthen the Monopolies Commission and speed up its work. "We shall do what the Socialists are afraid to do—bring the nationalised industries within its power of review." Mr. Churchill's appointments justify the hope that a new and brighter chapter in our history is about to open, with men at the helm, like Lord Leathers, who are not theorists or politicians with their heads in the clouds, but practical business men who, realising that the old order has gone, will bend their energies to the creation of a new order in which managements and workers will cooperate with brain and hand.

Current Events

Freedom for Steel

A BILL for winding up the Steel Corporation will be introduced into the House of Commons at an early date. This will write "finis" to one of the most discreditable acts of the last Parliament, for Ministers and their supporters knew the risks they were running and knew also that they had no mandate for interfering with the most delicately integrated and successful of our industries. It was an attempt to placate the Left Wing of the Socialist party, and it failed. The results of the voting in the steel districts suggest that, in acting as they did, the Government was not interpreting the wishes of those most concerned, namely, the great mass of the workers. Their relations with the various managements were good, and their output repeatedly exceeded the official targets. It was an act of dangerous vandalism to pass the legislation which is now about to be repealed. All who are associated with the maritime industries will be glad that this hindrance on production is about to be removed. We cannot afford at this period of rearmament to submit the steel industry to the ordeal of

State ownership and control. As experience with other nationalised industries has proved, nationalisation must not involve centralisation of administration. The new Government intends to set up a Steel Board, and thus secure all the advantages of Government oversight without irritating and costly interference with the industry. On this new body, it is intended that managements, consumers and workers shall be represented. The former Steel Board worked admirably, and there is no reason to fear that the new one will not fulfil all expectations. It will be yet another example of that spirit of compromise for which we, as a people, have always been famous. The new Steel Board will avoid the evils of nationalisation and profit by competition under the *ægis* of the State, but without State ownership and absolute control.

Dividend Policy

A CHANGE of Government will not result immediately in any appreciable lifting of the burden of taxation which rests on industry, for not for another six months will the new Chancellor of the Exchequer present his Budget to the new House of Commons. Of course, limitation of dividends, which was never more than a threat, has gone, but an excess profits tax is to be introduced. The freezing of dividends was bearing particularly badly on some investors, as Dr. E. P. Andreae pointed out in his statement to the shareholders of William Doxford & Sons, Ltd. He recalled that in each of the past four years their company had shown increasing profits and had during the whole of this time been working to capacity, hampered only by occasional shortages of materials. Shareholders, he added, would readily understand that the improved figures must be to some extent a reflection of economies resulting from their policy of " ploughing back " profits into the schemes for modernisation in all departments. But Dr. Andreae warned his hearers that, however the election might go, their dividend recommendation would have to stand. But he disclosed that had it not been for the threat of enforced limitation, they had intended to recommend a final dividend on the ordinary shares of 20 per cent, which would have meant a total distribution of 25 per cent for the year. " This, in our opinion, would have been a proper recommendation, based on the merits of the case." He added that if, for any reason, the proposed legislation for restriction of dividends were to be abandoned, then, other circumstances permitting, the directors would be willing to give prompt and sympathetic consideration to a compensatory distribution, possibly in the form of an early interim dividend in respect of the current financial year. Well, the electors have dispensed with the Socialist Government and every business man will welcome the relief from the anxieties which have been experienced for so many months. In view of the fall in the value of the pound sterling, investors are as much entitled to increased reward as the weekly wage earners. Both are suffering from the high cost of living.

The Independence of Voters

IN THE current issue of *The Seaman*, which was published on the eve of the General Election, Mr. Tom Yates, the general secretary of the N.U.S., made a strong plea to members to vote. If every trade unionist cast his vote as he had been told to do, the Socialist Government, he prophesied, would be returned with an overwhelming majority. " I have more than once pointed out in these notes that if the due-paying members of all the Unions affiliated to our Congress were to vote, along with the members of their families of voting age, we have it in our power, on that basis alone, to win an overwhelming victory for the Labour Government." He recalled that there were at the present time practically 8,000,000 members in the Unions affiliated to Congress, and assumed that there were at least two more votes in the households of these millions of trade unionists, representing a combined potential Labour vote of approximately 24 million. " In other words, if all the Trade Union votes upon which we should be able to depend are polled, the return of the Labour Government with an immensely strengthened Parliamentary majority would be assured." Although considerable pressure was exercised on workers, in some shipyards and workshops more than in others, thousands, indeed several millions, of electors exercised their right to vote as they liked. It has always been the aim of the Socialists by nationalisation and other means to force electors to obey the orders issued from Transport House, but in spite of all allurements, men and women assert their independence of judgment, with the result that Mr. Attlee and his supporters were defeated at the polls. Voters in this country, happily, are not willing to be dragooned. They believe in the secrecy of the ballot and though many of them, for the sake of the peace of themselves and their families, pay the political levy, they assert their right to freedom when they decide between the contending political candidates and, as events have shown, millions of them have no faith in the Socialist creed.

Trends in the Oil Industry

IT IS now common knowledge that the oil industry of Great Britain, working in the best possible harmony with companies in other countries, has made very valuable contributions towards postwar economic recovery. Not only those engaged in shipbuilding are grateful for the orders which have packed the books of the larger shipyards; the earnings of British oil, and the provision on an expanding scale of power for our industries, must form one of the brightest parts of our trade balance since 1945. At the launch from the Wallsend yard of Swan, Hunter & Wigham Richardson of the *Velletia*, one of four similar oil tankers for the Shell group of about 28,000 tons deadweight each, a most interesting survey of oil production and shipping was included in a speech by Mr. J. W. Platt, a managing director of the Royal Dutch/Shell group. Though Mr. Platt tended to deprecate the value of his remarks by saying that there was likely to be a total of some 600 speeches at the launches of oil tankers during the next few years, it may be said that his speech was in fact a model, not only in delivery but content. In a few minutes he was able to show the immense capital outlay required to provide tankers to carry the increased world demand for oil. Excluding the U.S.A. and the U.S.S.R., world demand for oil would increase by no less than 60 million tons during the next five years, and this would require additional investment by the oil industry of well over £1,200 million, of which no less than £300 million would be spent on new oil tankers. The British share in the world oil business was about 40 per cent, so that a large part of the extra capital would need to be raised by firms in this country. This shows clearly the inadequacy of the present depreciation allowances, and much of the finance would need to come from current earnings, already crippled by high taxation. The plain fact is that unless shipping companies are allowed to invest for the future from their own earnings, the shipyards may be hard hit in a few years time, while the world, including Britain, will go short of the fuel for industrial power.

Successful Gas Turbine Trials

SEA TRIALS having proved completely successful, the Shell tanker *Auris* has sailed for Tampico, powered by the first gas turbine to be fitted to a merchant ship. It is only fitting that Great Britain, the country where the gas turbine was invented and where it was first installed in an aircraft and later in a warship, should be the first country to send a gas turbine-driven merchant ship to sea. This achievement reflects great credit on Mr. John Lamb, who throughout has been the principal architect of the venture. It is unlikely that this first installation will be followed, at any rate

immediately, by many others. Gas turbines must at present run on distillate fuel if reliability is to be assured, and until residual fuels can be used they will not be a commercial proposition for the ordinary shipowner. It seems most likely at present that the solution to this problem will come from the chemical or metallurgical laboratory. Mr. Lamb, however, having first burnt residual fuel in a diesel engine in the tanker *Auricula*, will no doubt be considering the possibilities of using similar clarifying and purifying equipment for the same purpose in her sister ship. But in any case, the experience of running a gas turbine at sea is bound to be of practical benefit, and when the gas turbine becomes a commercial proposition, the Anglo-Saxon Petroleum Company will be in a position to take immediate advantage of it. The advent of the first gas turbine merchant ship comes at a time when very great improvements have been made in the efficiency of both steam turbine and oil engine machinery, and the competition between the three forms of propulsion is likely to become keen. This can only result in practical gains to shipowners, whichever form is chosen. It would be a courageous man who would at this juncture prophesy which will be the principal prime mover in another generation.

The Study of Cargo Handling

FROM THE number of delegates and observers from many maritime countries who attended the preliminary meeting of the International Cargo Handling Coordination Committee in London, it is apparent that this organisation will have widespread support. Shipowners, shipbuilders, naval architects, port authorities, packers, stevedores, manufacturers of cargo-handling gear and a wide range of interested parties were represented, and an interesting and constructive meeting was presided over by Rear Admiral Mark Wardlaw. Mr. H. Steffenson, from the Elsinore shipyard, pointed out that the designing problems encountered in the building of the *Jens Bang* and *Axelhus* (and their sister ships) had been made more difficult by the lack of information about similar cargo-handling problems; and Mr. S. Svendberg, a specialist in Swedish port affairs, said that in his work he soon realised that it was necessary to go beyond the boundaries of Sweden to find the solutions to Swedish problems. Dr. J. Ph. Backx, of Thomsen's Havenbedrijf, Rotterdam, stressed the importance of the technical approach to the problems of turnround in port. M. Xavier le Bourgeois, representing the French Ministry of Marine, is, with Mr. A. C. Hardy, one of the principal originators of the proposal to form this committee. He told the meeting that there was a growing tendency for ship construction to be governed by the nature of the cargo. He thought we were perhaps living in a period of transition during which vehicles and ships were not always suitably adapted to their cargoes. The remedy for delays in port, he thought, might be found in a higher specialisation in methods of packing and cargo handling ashore and afloat. Sufficient subscriptions were promised at the meeting to give the Committee a start and a provisional executive committee was appointed, Mr. Hardy being asked to act as chief coordinator. The first task must now be to seek the support of many more experts and organisations interested in this universal problem, to collate information and disseminate it, and to arrange for a full international meeting, probably early next year, at which technical papers will be presented.

Future of Shipbuilding Prices

SPEAKING after the launch of the new French passenger liner *Flandre* from the Dunkirk yard of the Ateliers & Chantiers de France, M. Lucien Lefol, chairman and managing director, referred to the future of shipbuilding prices in France. He pointed out that whereas the cost of steel for shipbuilding, since the general readjustment of European currencies in 1949, had risen by 36 per cent in Great Britain, 42 per cent in France, and between 45 and 50 per cent in the Netherlands (taking the average of steel originating from Britain, Germany and Belgium). Wages, on the other hand, which had increased by only 12 per cent in Britain and the Netherlands, had risen by 60 per cent in France in the same period. He could not dispute that there was justification for an increase in wages to combat the high cost of living, yet he was compelled to point out that wages and everything which entered into the net cost of a ship in France were now some 60 per cent higher than those of one of their great Continental competitors. The solution of this problem, which affected all export industries, was a matter for the Government, but he thought something should be done to increase national savings and help to restore confidence in the stability of money values. The high cost of wages, he added, had been caused partly by the great demand for labour for repairing the damage which had been caused in the region during the war. As far as the Dunkirk shipyard is concerned, the postwar plan of reconstruction and modernisation has been almost completed, and of the six berths now in commission two are capable of taking tankers up to 40,000 tons deadweight and one tanker up to 25,000 tons. By suppressing one berth and enlarging another, within one year there will be facilities for building two tankers of 40,000 tons and one of up to 58,000 tons.

End of the "Faraday"

A HISTORIC vessel with 76 years of service to her credit is at last being broken up at Newport, Mon. She is the old cable ship *Faraday*, built in Charles Mitchell's yard on the Tyne for Siemens Brothers & Co., Ltd. A vessel of 5,000 tons, she was designed by Sir William Siemens with three cable tanks and equipped with special gear to enable cables to be laid, grappled and repaired. The *Faraday* was also one of the first vessels to be fitted wih twin screws, each being driven by a separate engine. This arrangement, in conjunction with her two rudders, one forward and one aft, enabled her to be manœuvred readily. Another feature which made her easily recognisable was the position of her two funnels abreast of one another. It is also said that she was the first vessel to be equipped with electric light. During her service as a cable ship, the *Faraday* laid over 30,000 miles of submarine cable, including eight transatlantic cables. The vessel was retired from active service in 1923, since when she has been serving as a coaling station in Algiers. Now, after 76 years, she is being broken up at last and, in the words of one of the shipbreakers' foremen, "there is the end of one of the ships that helped to make Britain great—and she was not a warship."

SAYINGS OF THE WEEK

HOPE FOR PRIVATE ENTERPRISE

"I hope soon we shall all be free men once again, free to run our own business on sound lines, and that bulk buying will be replaced by private enterprise. By these means, we can re-establish our economic stability and restore the lost prestige of this once great country."—*Lord Rotherwick*, chairman of Clan Line Steamers, Ltd.

TRADE UNIONS AND TORY VICTORY

"If the Conservative Party decide to make onslaughts upon the standards of the working people the Trade Union movement will ensure that there is such a state of affairs invoked in the country that they will be bound to have second thoughts."—*Mr. H. G. Brotherton*, president of the Confederation of Shipbuilding & Engineering Unions.

"CREEPING PARALYSIS"

"The root cause of the shortage of shipping space and the consequent increase in values and rates is not an insufficient number of ships. The trouble is that so many are being so handled that only three-quarters of their available space is being used and round voyages often take 25 per cent longer in time, despite the increased speed of ships, because they are being held up in port sometimes for weeks. Ports of the world for a long time have suffered from this and now this creeping paralysis in the handling of ships has gripped this country."—*Mr. R. G. M. Street*, managing director of The South American Saint Line, Ltd.

ON THE "BALTIC"

COAL BUNKERS FOR MEDITERRANEAN VESSELS

By BALTRADER

MANY of the handy and medium sized British vessels engaged in the Mediterranean trade are fired with coal. The vessels of 6,000 to 8,000 tons deadweight are mostly somewhat advanced in years; that type of ship has not been built for British account either during or since the war, and there was a considerable period before that when few vessels of any type were built on account of the slump. It follows that our medium sized tramps, although still capable of some years' valuable service, are not an economical proposition to convert to oil burning. Even in the case of war-built coal burning vessels of handy size, some owners are at present debarred from conversion to oil by reason of not having an existing oil bunker contract. In fact the oil companies will not promise to sign a bunkering contract which would add to the number of vessels to be bunkered by them at a time when they are concerned about supplies, as a result of the Persian imbroglio.

High Cost of Foreign Bunkers

The matter which worries the owners is the difficulty of obtaining good coal bunkers at a reasonable price. They have no complaint in regard to the price of bunkers in the United Kingdom, say, about £5 per ton; the quality varies much, but sometimes is very good. But the quantity allowed by N.C.B. officials to be shipped as bunkers at U.K. ports is apt to fall short of owners' needs when a Mediterranean round voyage is intended. If a cargo of British coal is forthcoming or if an outward run in ballast is intended, a reasonable quantity of bunker coal is usually supplied but, more often than not, there is no cargo to be had in this country. The owner has to look to Rotterdam, Antwerp or a near German port for a cargo; he then may receive only sufficient bunker coal in the United Kingdom to cross the North Sea to the near Continent. He has to pay to foreign suppliers up to £8 per ton, say an average of £7, for his bunkers to enable him to get to the Mediterranean with a cargo of foreign coal.

He feels aggrieved at this heavy charge arising through his being unable to obtain adequate supplies of bunker coal in his own country. Handy ships and the medium-sized vessels of uncertain age are best treated with care in the winter months, for which reason an outward cargo where crossing the Bay of Biscay is to be desired, whether it is obtained in the United Kingdom or on the Continent. When, however, the main object of a trip to the Mediterranean is to bring essential cargoes of raw materials home to the United Kingdom it is fair to ask for as much bunker coal as can possibly be granted, even if the outward cargo is shipped on the Continent. This is a question of "coordination of Transport and Fuel and Power" which no one could be more fitted to appreciate than Lord Leathers.

No End to Demand

The news of the crop failures once more in wide areas of India will mean that further great quantities of grain will be needed and will be supplied from America's generous resources. No doubt the U.S. authorities have this in mind when they propose to add another hundred 10,000-tonners to the large number withdrawn this year from the laid up reserve. There seems to be no end to the demand for shipping, in spite of the unusual lack of movement in a number of important trades. The River Plate holds out no prospect of contributing much to employment for at least a year. South African coal stems and export licences are still almost unobtainable; Australian grain chartering is nearly at a standstill; bad weather, difficulties of inland transport and perhaps also a reduced demand for some African products have caused the West African lines to cease from engaging tramp tonnage on time charter; this has removed for the time being a very fruitful source of employment. North China and Manchuria are not at the moment, producing a tithe of the valuable charters which were being arranged earlier in the year. However, it is expected that there will be plenty to occupy the available shipping on the routes between North America, Europe, India and the Far East. The liner companies pay high rates for time charter trips from Europe to Australia and the East. Long period time charters continue to be dangled before owners, at high rates, by first-rate operators who ought to know what they are about.

The Freight Market

Quieter conditions have ruled in the North American market in the past few days, following the heavy chartering of recent weeks for grain, coal and lumber. Few orders are being pressed for November loading either on the Pacific or the Atlantic coast; at the same time not many vessels remain unfixed for loading this month. The Ministry of Food has succeeded in securing a small reduction in freight with the fixture of *Sunrover*, 42,000 quarters, heavy grain, from U.S. Gulf to U.K. or Antwerp-Hamburg range at 26s. 3d. per quarter, December 1/15, compared with 27s. 6d. previously paid. Coal chartering from Hampton Roads to Europe has slowed down, but $19.50 and $20 were paid last week for Hampton Roads to Buenos Aires, November. The *Maashaven*, 8,500 tons, has been fixed Cuba to Rotterdam at $21, end November. Several vessels were recently taken for sulphur from Gulf to U.K. at 125s., November and November/December, and 124s. for late December/January. The Ministry of Food was active last week chartering about 10 vessels at 112s. 6d., heavy grain, from Black Sea to the United Kingdom for November and December, and 110s. for January. So little business has offered from the River Plate that tonnage has shunned that area or has left it in ballast. A small improvement in rates has resulted. Three cargoes have been fixed on berth terms from up river, completing Necochea or Bahia Blanca to Antwerp-Hamburg range at 65s., November/December and December loading. From West Australia to U.K. 162s. 6d. has been accepted for oats in bulk December 10/January 10. There has been good demand for tonnage on time charter for the trip from this country to Australia: *Rookley* (m.v.), 9,200 tons deadweight, 500,000 ft. bale, 10 knots on 7 tons, is fixed at 67s. 6d. per month, delivery Sunderland, November 23/December 3, and m.v. *Silverguava*, 8,927 deadweight, 500,646 bale, 13 knots on 18 tons diesel oil, at 69s. per month, delivery Middlesbrough, December 1/20.

Competition for Ship's Cabin Design

An anonymous donor has put up a prize of £250 for the best plans for the decoration, furnishing and fitting of a suite of ship's cabins submitted in a competition organised by the Council of Industrial Design Scottish Committee. The suite should be suitable for a ship which may serve on any of the trade routes of the world. Competing designers have complete freedom of choice in furniture and materials. They are asked to plan the arrangement of a double cabin, sitting room and private bathroom suite, of which the sitting room would be convertible into a subsidiary double cabin. Entries close on January 16, 1952, and will be judged by three representatives of the Institution of Naval Architects, the Chamber of Shipping and the architectural profession. Copies of the rules can be obtained from the Council of Industrial Design Scottish Committee, 95 Bothwell Street, Glasgow, C.2.

DUTCH SHIPPING AND SHIPBUILDING

CHANGES IN PORT TRAFFIC : MANY NEW ORDERS

By THE SHIPPING WORLD'S Own Correspondent

NETHERLANDS ships and shipyards have been fully employed in the past few months. The situation on the freight market remains favourable and many new orders have been acquired by several yards, most of which already have good order books.

That ships are much better filled these days than in prewar years is to be seen from the inward traffic figures for Rotterdam harbour. Whereas the weight of incoming cargoes has passed the 1938 level, this has been achieved with fewer ships and less tonnage. In the first six months of this year Rotterdam had an inward traffic of 11,359,074 tons, against 11,340,598 tons in 1938. In the third quarter this traffic was about the same. Yet in the period January 1-September 30, only 10,104 seagoing ships, totalling 16,868,079 tons net, arrived in the port, against 11,539 ships totalling 18,503,169 tons net in 1938.

The figures for Rotterdam, a typical transit port, show remarkable changes which are of much interest not only to the student of shipping, but also to the economist. As is shown in the accompanying table, imports have more than doubled since 1938, whereas the incoming transit traffic was nearly halved. Exports also increased considerably, but the outgoing transit traffic was not half that in 1938. As direct trade between Holland and Germany is not included in these figures, it is clear from the increased export and import figures that more trade is being done with other countries than before the war, whereas the more than halved import and export of Germany via Rotterdam not only point to a reduced trade between Germany and overseas countries, but also mean a severe blow to Rotterdam as a port and to Dutch seagoing and Rhine shipping.

The figures for Amsterdam show a much smaller change in the general situation. In this port, the number of ships arriving is larger than the prewar figure. From January 1-August 31, 1951, 2,825 ships totalling 3,160,896 tons net arrived, against 2,277 ships totalling 3,079,906 tons in the same period of 1938. Contrary to those for Rotterdam, the Amsterdam figures show a decline compared with last year. In this respect it is of interest to note that in Antwerp, Rotterdam's chief competitor, the number of ships that arrived during January 1-May 31, 1951, was 4,727, totalling 8,663,888 tons net, against 4,817 ships totalling 8,144,314 tons in the same period of 1938.

More Orders

In THE SHIPPING WORLD of July 11, 1951, attention was drawn to the large order book of Nederlandse Dok en Scheepsbouw Maatschappij (N.D.S.M.), Amsterdam, which at that moment included 19 tankers totalling 376,000 tons d.w., providing the yard with full employment until early in 1955. Since then, orders for seven other large tankers have been reported: two of 31,000 tons d.w. and two of 24,650 tons d.w. for the Gulf Oil Corporation, Pittsburg (delivery 1955-56), one of 31,000 tons d.w. for Biorn Biornstad, Oslo (delivery at the end of 1956), one of 20,200 tons d.w. for the Compagnie Auxiliaire de Navigation, Paris (delivery at the end of 1953) and one of 18,500 tons d.w. for Van Nievelt, Goudriaan & Co., Rotterdam (delivery early in 1953). The 31,000-tons tankers will be the largest ever built in Holland. Those for Gulf Oil will be operated by the Afran Transport Company in Liberia. All ships will have Parsons turbines built by N.D.S.M. The 31,000-tonners will have a speed of 16.85 knots and the 24,650-tonners 15.65 knots. Van Nievelt, Goudriaan & Co.'s new tanker will be a sister ship of the motor tanker *Sirrah*, ordered last February. A 7,500 h.p. Stork engine will give a speed of over 15 knots.

Finland has ordered four ships in Holland since June. The Amsterdamse Droogdok Maatschappij will build a 8,500-tons gross motor cargo ship with delivery in 1953 for Enso-Gutzeit, Helsinki. This ship will run on the Finland-South Africa route and will have a speed of 15 knots. Gustav Erikson, of Mariehamn, has ordered a 4,000 tons d.w. motor cargo ship from J. & K. Smit's Scheepswerven, Kinderdijk. This shelterdecker will have a Stork diesel engine. Jonker & Stans, Hendrik Ido Ambacht, will build a harbour tug/icebreaker for the municipality of Kotka, and C. van der Giessen & Zonen's Scheepswerven, Krimpen a.d. Yssel, received an order for a 14,900 tons d.w. tanker from Neste O.Y., Helsinki. This tanker will have a 6,300 h.p. M.A.N. diesel engine and a speed of 14.5 knots.

Besides the 20,200-tons tanker already mentioned, France ordered a fast 2,700 tons d.w. motorship for service on the Great Lakes. A tanker of 1,150 tons d.w. was ordered from Bijker's Aannemingsbedrijf, Gorkum (1,050 h.p. M.A.N. diesel engine; speed 12 knots) and a coaster of 370 tons d.w. for the Compagnie Française des Extraits Tinctoriaux et Tannants, Paris, from Th. Fikkers, Foxhol.

Cargo Ship for British Owners

The Medomsley Steamship Co., Ltd., London, has ordered a 9,500 tons d.w. motor cargo ship from the Werf De Noord, Alblasserdam. This is one of the few British orders received by Dutch builders since the war. The principal dimensions are length 459 ft., breadth 60 ft., depth 36 ft. The engine is a 4-cylinder Wilton-Fyenoord/Doxford diesel engine of 3,450 h.p. at 112 r.p.m. Another interesting order was that received by Scheepswerf Gideon, Groningen, for a 350-tons coaster for S. A. Wildberger, Bahia. This small ship will carry cacao beans along the Brazilian coast, and will also accommodate ten passengers. The principal dimensions are length 53.90 m., breadth 8.75 m., depth 3.15 m., draught 2.13 m. Two Sulzer engines of 450 h.p. each will give this twin-screw ship a speed of 11 knots. Another yard in Groningen province, Ferus, of Foxhol, will build a lightship for the Burmese Government.

Dutch shipping companies are also enlarging and renewing their fleets. The Koninklijke Nederlandse Scheepvaart Maatschappij, Amsterdam, has ordered four motor cargo ships of 3,800 tons d.w. at the same time, bringing the total of ships building or on order for this company to ten. Two of the ships will be built by Gebr. Pot, Bolnes, the other two by C. van

SEAGOING TRAFFIC OF THE BENELUX PORTS
(in tons of 1,000 kg.)

		Rotterdam (First six months)	Amsterdam (First six months)	Antwerp (Jan.1-April 30)
Incoming traffic :				
Import :	1951	6,877,621	1,383,506	3,444,467*
	1950	4,615,925	1,344,095	2,543,901
	1938	3,262,475	1,148,473	2,692,983
Transit :	1951	4,481,453	419,019	1,289,490
	1950	1,721,785	282,694	854,108
	1938	8,078,123	561,211	1,303,097
Total :	1951	11,359,074	1,802,525	4,733,957
	1950	6,337,710	1,626,789	3,398,009
	1938	11,340,598	1,709,684	3,996,080
Outgoing traffic :				
Export :	1951	2,554,540	819,914	3,154,721
	1950	1,796,069	669,283	2,336,338
	1938	1,375,576	542,970	1,885,400
Transit :	1951	3,016,110	379,269	1,699,908
	1950	2,921,511	289,125	1,233,518
	1938	7,164,355	513,484	1,919,859
Total :	1951	5,570,650	1,199,183	4,854,629
	1950	4,717,580	958,408	3,569,856
	1938	8,539,931	1,056,454	3,805,259

* Including goods in bond

der Giessen en Zonen's Scheepswerven, Krimpen a.d. Yssel. Stork engines will give these ships a speed of 13 knots. Verenigde Nederlandse Scheepvaart Maatschappij (V.N.S.) ordered two single-screw cargo ships of about the same type as the *Heemskerk* and *Hoogkerk*, which have now seen two years' service. One, to be propelled by a Stork engine, will be built by N.D.S.M., the other, with a B. & W. engine, by P. Smit, Jr., Rotterdam. The speed of both ships will be 16 knots. The engines will burn heavy fuel oil. These ships will be classified in Lloyd's Register highest class and will have a maximum draught of 30 ft. However, they will be put into service as open shelterdeckers with a draught of 28 ft., admitting a deadweight of about 10,000 tons. There is accommodation for 12 passengers and a crew of 55. Delivery is in the first half of 1954.

Koninklijke Hollandse Lloyd has ordered an 8,000 tons d.w. cargo ship for the route to the east coast of South America from C. van der Giessen & Zonen's Scheepswerven, Krimpen a.d. Yssel. She will be a sister ship of the *Gaasterland* and *'s-Graveland*. The speed will be 15 knots and delivery is scheduled for the middle of 1953. Other orders for Dutch owners include a 2,000 i.h.p. tug for L. Smit & Co's Internationale Sleepdienst, Rotterdam, to be built by J. & K. Smit's Scheepswerven, Kinderdijk; a 750 tons d.w. tanker, two coasters of 850 tons d.w. each for Van Nievelt, Goudriaan & Co., Rotterdam, and over a dozen coasters, averaging about 750 tons d.w., for other owners. Compared with the first six months of this year, orders for new coasters show a decline.

Arbitration in London and Hamburg

To the Editor of THE SHIPPING WORLD

SIR,—"Baltrader" in your issue of October 24 deplores the fact that in the charters recently concluded for grain to Germany a stipulation was made that any arbitration should be conducted in Hamburg.

The writer has discussed this point with the German charterers and their attitude is that while they know that London arbitrators are capable, too many arbitrators take too long and the cases eventually finish up in legal hands, making arbitration here much too expensive. It would seem that the original spirit of arbitration (where a dispute was intended to be settled by commercial men actually practising shipbroking) has been lost and the tendency over the last twenty years has been for arbitration to be conducted by what amounts to professional arbitrators who rarely agree and pay too much attention to the legal side and not sufficient attention to the commercial intention.

It is for this reason that the German charterers prefer to conduct arbitration in Hamburg, where there are practical men capable of handling a dispute quickly and cheaply.—Yours, etc.,

TOM DODD.

Stone House,
Bishopsgate,
London, E.C.2.
October 26, 1951.

THE SECOND production this year by the Baltic Amateur Dramatic and Operatic Society was of "The Happiest Days of Your Life," a three-act farce by John Dighton. It was presented at the Scala Theatre, London, on November 1, 2, and 3. The cast of thirteen was led by Lewis Duttson and Sally Valentine, and the producer was Dudley Moore. Profits from the play are to be allotted to charitable objects connected with the Baltic Exchange.

THE Timber Development Association has issued a revised edition of the red booklet *Timber of South America*. Fresh information as to the properties and uses of South American timbers has been incorporated in the revised edition. The booklet covers 93 timbers giving details of common and other names, general description, working qualities, seasoning, strength and uses in most instances. A full index of common and botanical names has been included together with a useful guide which should be of great assistance to all handling these woods. Copies can be obtained from the Timber Development Association, 21 College Hill, London, E.C.4.

Navigational Improvements at Southampton

A contract placed by the Southampton Harbour Board with the Dredging & Construction Co., Ltd., New Conduit Street, King's Lynn, for an extensive dredging scheme, covering the approaches to the port and main channel within the port, has now been completed. This was the largest dredging contract ever awarded by the Board and its completion has resulted in a great improvement in the navigable channels which are used by the largest liners in the world. The Dredging & Construction Co., Ltd., has produced a brochure giving the history of the work undertaken on behalf of the Board. Following the completion of the dredging operations, the Board, in consultation with Trinity House, has made a complete review of buoys and other navigational aids in the port area and a revision of buoyage is being arranged to correspond with the improved approaches and channels. New navigational facilities will also be provided where necessary. A further project the Board is now investigating is a port control and information service, which will embody radar and radiotelephone facilities. Among other purposes, this is intended to provide shipping interests in the port with full information to assist in the safe and speedy handling of vessels.

Ports of the River Tay

In the course of their review of trade harbours under Section 66 of the Transport Act, 1947, members of the Docks & Inland Waterways Executive visited Dundee in April 1949 and in November 1950 to examine the conditions and needs of the port, and held local discussions with the Dundee Harbour Trustees, the Dundee Corporation and with representatives of users of the ports of the River Tay and of the workers employed. The British Transport Commission has now requested the Executive to undertake consultations in the preparation of a scheme in accordance with Section 66 of the Act. Members of the Executive are accordingly visiting Dundee and Perth on November 15 and 16 and are arranging to meet the Dundee Harbour Trustees, Perth Town Council, wharfowners at Newburgh, representatives of shipowners, Dundee Chamber of Commerce, Perthshire Chamber of Commerce and other trading interests, Dundee shipbuilders, port employers and the Transport & General Workers' Union.

Rise in Shipping Casualties

Figures issued by Lloyd's Register of Shipping show that 190 vessels of 100 tons gross and over, aggregating 326,466 tons, were total losses, broken up, condemned or lost from other causes during the quarter ended December 31, 1950. Of this total, 37 ships, of 64,792 tons gross, were registered in Great Britain and Northern Ireland. The United Kingdom's share of ships totally lost during the period amounted to seven vessels, of 10,133 tons, or 0.12 per cent of the ships and 0.06 of the gross tonnage in British ownership. The country with the largest number of ships totally lost during the quarter was Norway, with 13 vessels, of 8,259 tons gross, although Greece had the highest tonnage decline of 15,042 tons, comprising four vessels. Ships totally lost, condemned, etc., consequent on casualty, totalled 74 vessels, of 82,655 tons, of which Great Britain's proportion amounted to seven of 10,133 tons. The number of ships lost from causes other than casualty damage was 116 (243,811 tons), the United Kingdom's losses in this instance amounting to 30 vessels (54,659 tons). Of ships lost through foundering, two were British, the cargo steamer *Fred Borchard* and the trawler *Yezo*, totalling 1,887 tons gross. The total losses sustained during the period compare with the 130 vessels, of 314,046 tons, lost during the previous quarter, and 109 ships, of 166,841 tons, in the last quarter of 1949.

SURVEYS of economic and commercial conditions in Portugal and Honduras have been published by H.M. Stationery Office, priced at 3s. and 1s. net respectively.

TWO BOOKLETS, containing in book form the statistical comparisons which have been used in advertisements of R.A. Lister & Co., Ltd., in recent months, have been compiled and issued by the Auto-Truck sales department of the company.

The Association Technique Maritime et Aeronautique, of 1 Boulevard Haussmann, Paris, 9, has issued its 1951 *Annuaire*. This useful handbook contains, in addition to the names and addresses of members, an index and analytical classification of the transactions of the Association from 1923 to 1951.

Monthly Light Alloys Section

MARINE DEVELOPMENTS IN ALUMINIUM—1

A REVIEW OF SUCCESSFUL APPLICATIONS AND RESEARCH DEVELOPMENT WORK*

By J. VENUS (Naval Architect to the Aluminium Development Association)

PRACTICAL development has now reached the stage which makes it possible to consider aluminium for almost any ship-building application. This is not to say that all problems have been solved or that no more can be learned, but present research and development now have the benefit of being backed by very many satisfactory applications. Many recent marine applications are detailed in Goldsworthy's paper to the Aluminium Congress in Zürich and in other publications of the past few years. A brief summary only is therefore included in this paper to indicate that aluminium has been successfully applied to practically all types of vessel.

Lifeboats.—In lifeboats aluminium is making very great headway and will continue to do so. It has been proved by actual service that it can safely be expected to outlast the life of the parent vessel, whereas steel boats, even when galvanised, often require extensive repairs within 10 years. The weight saved by the use of aluminium is often of special value, and in this respect it is time that increased attention was paid to the development of the all-welded aluminium lifeboat. This should be designed specifically for welding, with built-in buoyancy, and there will then be a very definite need for more standardisation of lifeboat sizes to take advantage of semi-mass production methods. The field is open for the development of a simple, inexpensive method of hand propulsion to take advantage of the decision of the 1948 International Conference to allow hand propulsion in lieu of a motor for Class B boats. Some attention has already been given to this, and again aluminium is likely to be adopted.

Specialised Craft

Small High-Speed Craft.—Aluminium would appear to be a natural first choice for small craft, particularly for high-speed naval craft where weight is a very expensive item in terms of horsepower per ton. It is reported from America that several 95-ft. motor torpedo boats have recently been built in aluminium alloy and that some of them are of all-welded construction. In addition to the gain due to weight saving, there is also the factor of reduced maintenance. As proof of the corrosion resistance of suitable aluminium alloys the motor yacht *Diana II* is cited. This vessel, a 55-ft. cabin cruiser launched in 1931, has seen continuous salt-water service since it was built, including service with the Navy during the war, and when recently examined on a slipway her condition was found to be very satisfactory. The original plating, 3/16 in. in thickness, was generally in first-class condition and no replacements of structural material whatsoever have been found necessary. It was noted, moreover, that most of the plate edges and butt strap edges were still perfectly square and the sharp edge caused by the initial cutting of the metal was still present, indicating that no corrosion or reduction in thickness had taken place even after this lapse of time, which included periods of neglect. Fig. 1 shows the *Ain-al-Bahr*, a 60-ft. launch in aluminium alloy, constructed recently for the Pakistan Government. It weighs approximately one-quarter of a similar sized vessel built in teak and attains the same speed with half the horsepower.

River Vessels and Barges.—The principal advantages in using aluminium for barges are increased deadweight and reduced maintenance. Many barges have been built for service in the Tropics, where aluminium construction enables more cargo to be carried when draught is severely restricted by drought at certain seasons. Another useful asset in aluminium construction of this type is that when barges or other vessels are prefabricated for shipment and re-erection abroad, the shipping weights are considerably less than for steel construction. Details of an interesting method of barge construction have recently been published, wherein the plates and sections are extruded as one unit and the longitudinally framed structure is built up by welding. Aluminium has also been used for the superstructures of several river passenger vessels for the purpose of limiting draught, and in this country it is being used in passenger steamers at present being modernised for the River Thames, where stability and trim, due to additional deck erections, are proving a problem.

Trawlers and Whalers.—Aluminium deckhouses for whalers and trawlers is another interesting example, as it has been possible to maintain adequate stability margin while providing increased deckhouse capacity and additional equipment on deck without alteration to the hull forms, which have been developed over many years and found satisfactory. The use of aluminium for the fish holds of trawlers is also expanding. In ships which have been so fitted, one or two years of service have shown the advantages resulting from the ease of cleaning and long life of the pound boards, and generally ensure that when repeat orders are placed the new vessels embody the same features. Fig. 2 shows a modern whaler with aluminium deckhouse structure (except for casings).

Ore Carriers.—With ore-carrying and other purely dead-weight-carrying vessels, the future for aluminium is promising, particularly as the raw materials now have to be brought to the industrial areas from further afield as the older deposits are being worked out; thus the need for more ships of this type is arising. The ever-increasing port maintenance and running costs work in favour of the aluminium ship with its increased carrying capacity and reduced maintenance charges, and a reliable pointer in this direction is the great number of aluminium barges that are being built.

Tramp Ships.—In the field of the relatively slow ships of the tramp type little is to be gained by using aluminium, other than for wheelhouses, awnings, lifeboats, fittings, etc., as with these vessels cubic capacity and not deadweight carrying capacity is usually the overriding factor.

Tankers are another promising class where aluminium may well eventually solve the very serious corrosion problems and the first major step here will most likely be the building of a coastal tanker. To gain the necessary experience such a vessel must carry alternatively light spirit and water ballast cargoes, and for this purpose the corrosive conditions in oil barges, which may never be ballasted, are not sufficiently exacting. It can be said that there is some evidence that aluminium may resist quite effectively the corrosive conditions which exist where light spirit and water ballast are carried alternately.

Passenger Ships' superstructures, which are discussed in more detail later, show enormous possibilities for aluminium; so much so that it is considered that the use of aluminium for the superstructures of any vessel with a speed/length ratio greater than unity should be considered on the grounds of economy in operation and first cost.

Research and Development

Muckle's early paper aroused considerable interest in the possibilities of aluminium for ships' superstructures and the criticisms and questions produced by this and his subsequent papers have undoubtedly stimulated much of the research and large-scale experiment. That most of the objections advanced at the time have been largely overcome is shown by the number of successful applications to date. Muckle's principal researches have been into the problems associated with superstructures, and this work is still proceeding. His papers, summarised in a recent Research Report, demonstrate that:

Aluminium alloy ships' structures can be designed to have the same strength as steel structures.

The weight of an aluminium alloy structure is less than one-half the weight of the corresponding steel structure of the same strength.

This weight-saving can be effectively applied in three ways:

(*a*) to increase cargo carrying capacity

(*b*) to improve stability, or

(*c*) to reduce power and fuel for a given speed.

The advantage gained by using aluminium alloys in a ship's structure depends largely on the type of ship being considered. The most favourable types are those whose structural weight is a large proportion of total displacement, and those of high speed using high power.

Experiments carried out on resistance to buckling of alloy plates form a suitable basis for comparison with steel structures, and enable aluminium alloy scantlings capable of resisting buckling to be determined.

The experiments carried out on a model superstructure showed that, in general, the composite structure behaved satisfactorily.

In his paper, Corlett investigated another aspect of the superstructure problem and showed that thermal expansion stresses caused by the different coefficients of expansion of steel and aluminium only warranted consideration when superimposed upon the normal longitudinal wave stresses, and pointed out that the conditions required to produce both forms of stress are not likely to exist simultaneously. Transverse stresses of appreciable magnitude might exist and a method of treatment was developed. It was pointed out that carefully detailed design could eliminate any undesirable consequences of the transverse expansion induced by the temperature conditions. Bulkhead design in aluminium is at present being investigated.

* Abstract of a paper read before the Institution of Engineers and Shipbuilders in Scotland on October 23.

Fig. 1—The 60-ft. aluminium survey vessel "Ain-al-Bahr" for service in Pakistan

Riveting.—The difficulty of driving aluminium rivets has long been recognised as one of the major obstacles in ship work, and considerable research has been devoted to this problem by the aluminium industry and elsewhere. A report of work which has been carried out by the Aluminium Development Association has recently been published and a further report will shortly be issued. It is expected that results of research by other bodies will also be available in due course. These investigations have gone far to solve the problem of driving rivets up to $\frac{7}{8}$ in. in diameter with normal equipment.

Welding.—The major developments in this field have come from the United States where inert gas shielded arc (Argonare welding here) and more recently Aircomatic welding, which uses a consumable aluminium electrode, were developed. For some time past Argonare welding has been in use in this country in several fields of engineering, but application to shipyard work has been slow. There is a very great need for intensified British research on the application and economics of the consumable electrode type of Argonare, which is already accepted for shipbuilding in the United States.

Other Investigations.—Recommendations arising from investigations covering bi-metallic joints, painting and protection, deck compositions, stud welding, etc., are dealt with later under shipyard practice.

British Standards

There is still a widespread impression that there are far too many different types of alloy on the market, and to the shipbuilder the situation may be further confused by the fact that the various aluminium manufacturers may sell these alloys under their own trade names or references. In addition to this there are the D.T.D. aircraft specifications and the STA/7 Services Schedule with AW prefix, and to regularise the position British Standards have been prepared and issued over the past few years

When the available shipbuilding alloys are examined in relation to Lloyd's tentative rules for aluminium in ships, one finds, in fact, that the choice is limited to two types of alloy, one the non-heat-treatable aluminium-magnesium alloy containing up to 5.5 per cent magnesium, and the other the heat-treatable aluminium-magnesium-silicide alloy H.10. When required in the form of plate or extrusion the latter alloy must be ordered in the double-heat-treated or WP condition to conform with the requirements of Lloyd's Register.

In the British Standard nomenclature the prefix N means non-heat-treatable and the prefix H means heat-treatable material, the alloy number remaining the same as for the STA/7 Schedule; thus AW.6, the non-heat-treatable 4½-5½ per cent aluminium-magnesium alloy, becomes N.6, and AW.10, the heat-treatable aluminium-magnesium silicide alloy, becomes H.10. The second prefix letter refers to the form in which the wrought material is supplied, that is, P for plate, S for sheet, E for extrusion, R for rivet material, etc., and the suffix letter in the heat-treatable alloys designates whether they are single or double heat-treated. The suffix W means single-heat-treated and WP means double-heat-treated. For the non-heat-treatable material the suffix M means as manufactured.

Plate material in the non-heat-treatable aluminium-magnesium alloy is covered by the recent British Standard NP.5/6, which contains 3-5½ per cent magnesium. It is possible to produce the required mechanical properties with about 4 per cent magnesium content in plate material only; in extruded sections the alloy to the requirements of Lloyd's Register contains up to 5½ per cent magnesium, and here it should be noted that L.R. requirements for ultimate tensile strength, namely, 17 tons per sq. in., are 1 ton higher than the British Standard minimum. Table I gives particulars of these shipbuilding alloys with mechanical properties, and they should be compared with figures given in Lloyd's tentative rules, which are:

Ultimate tensile strength ... 17 tons per sq. in.
0.1 per cent proof stress ... 8 tons per sq. in.
Elongation on 8 in. gauge length not less than 10 per cent.

Casting Alloys.—The choice of a casting alloy for shipyard use is governed by requirements of good corrosion resistance,

TABLE I—ALUMINIUM ALLOY PLATE AND EXTRUSIONS CONFORMING TO LLOYD'S RULES BOTH IN CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

Specification	Nominal Composition (Principal Constituents only)	Minimum Mechanical Properties: Specified 0.1 per cent Proof Stress (tons per sq. in.)	Ultimate Tensile Strength (tons per sq. in.)	Elongation on 2 in., (per cent)
Non-Heat-Treatable Alloys—				
Plate B.S.1477, NP.5/6-M	3.0 per cent 5.5 per cent Mg	8	17	12
Extrusion B.S.1476, NE.6-M	4.5 per cent 5.5 per cent Mg	8 (up to 2 in.)	16*	18
Heat Treatable Alloys—				
Plate B.S.1477, HP.10HW-P	1.0 per cent Mn. (max.) 0.4-1.5 per cent Mg 0.75-1.3 per cent Si	14	18	8 (less than ⅛ in.) 6 (⅛-1 in.)
Extrusion B.S.1476, HE.10-WP		15	18	10

* This can be raised to 17 tons per sq. in. when material to L.R. requirements is specified.

Note.—The non-heat-treatable (Al-Mg) alloys, when required in the form of sheet, that is, NS.4, 5 and 6, can be supplied in various degrees of hardness, which increases the proof stress and ultimate strength, but reduces the elongation. For further information, refer to the appropriate British Standard and A.D.A. Bulletin No. 2, *The Properties of Aluminium and Its Alloys.*

good casting properties and adequate strength. On no account should alloys of unspecified or non-standard composition be used, as neither their mechanical properties nor their resistance to corrosion can be guaranteed. B.S.1490 includes all the casting alloys in general use and those suitable for shipbuilding purposes are listed in Table II (below).

Factors Affecting the Economic Case

Passenger Ship Superstructures.—Muckle's paper, which envisaged the use of aluminium for the superstructures of passenger ships of all types up to large trans-Atlantic liners, and which was perhaps considered at the time to be rather futuristic, is now being vindicated in a remarkable fashion. The reasons for using aluminium for this purpose are even more convincing today.

Stability.—It is true that stability does not always present difficulties to the designer, but new factors have arisen which may tend to complicate the problem more. Firstly, under the 1948 Conference on Safety of Life at Sea, the requirements for stability after flooding have been strengthened to the effect that any passenger vessel must have an adequate margin of stability after flooding of the longest compartment. When the convention has been ratified, this

About Aluminium . . . 5

MECHANICAL PROPERTIES · *continued*

The aluminium alloys have reached their present industrial standing relatively quickly, and there is, perhaps, not a proportionately wide knowledge of their nature and behaviour. Although only the barest facts can be included in a series of articles of this length, it is hoped that they may serve the student, in particular, as an introduction to this prominent structural metal.

Compression

The behaviour of aluminium alloys under compressive loading does not receive the attention given to tensile properties, perhaps because the strength of structural members is so often limited by buckling, and the actual compressive strength of the metal is not approached.

For most engineering purposes, it is customary to use the same design stress for compressive work as for tensile. In the testing machine, an aluminium alloy will show an apparently higher strength in compression than in tension, but this can in part be attributed to the changing cross-sectional areas of the specimens, increasing in one case and decreasing in the other, while the stress is based on the original area. Cylindrical specimens of the softer aluminium alloys can be compressed to thin discs before cracking, and even then may sustain the load. The harder alloys show a more definite failure point with pronounced cracking.

A proof stress, at which there is a small measurable departure from the elastic range, is therefore usually quoted, and will be roughly equal to the corresponding tensile proof stress; in cast or forged metal it is usually slightly higher. Sheet and extruded products, however, are often straightened by stretching, an effect of which is to lower the compressive proof stress and raise the tensile proof stress by small amounts.

Shear

In the wrought alloys, the ratio of ultimate shear stress to ultimate tensile stress varies, with composition and method of fabrication, from about 0.5 to 0.75. When test results are not available, a ratio of 0.55 is safe for most purposes.

Rivets in low and medium strength alloys, with shear strength up to 13 tons per sq. in., can be driven cold. Small rivets in stronger alloys can be driven in the soft state immediately following solution treatment and, on age-hardening, shear strengths up to 17 tons per sq. in. will be developed.

Most aluminium alloys show a shear or rigidity modulus (G, C, or N) of 3.7 to 3.9 million lb. per sq. in. (compared with 12 million lb. per sq. in. for steels).

Bearing

The ultimate bearing or crushing strength of aluminium is as difficult to define, test, or relate to tensile properties as it is with other metals. Bearing must, however, often be a criterion in the design of riveted or bolted structures, and a bearing yield stress is widely recognized; this is arbitrarily defined as the pressure (per unit effective bearing area) exerted by a pin in a round hole that will permanently deform the hole by 1% of its original diameter. This stress, for most alloys, approximates in value to the ultimate tensile stress.

Hardness

Resistance to surface indentation is an approximate guide to the condition of an alloy, and is used as an inspection measure. Brinell (steel ball), Vickers (diamond), and Shore Scleroscope (diamond hammer) testing machines are applied to aluminium alloys; typical Brinell values range from 20, for annealed commercially pure metal, to 175 for the strongest alloy. Hardness readings should never be regarded as a quantitative index to tensile strength, as is often done with steels, for in aluminium the relation between these two properties is far from constant.

Impact Strength

The low elastic modulus of all aluminium alloys is an asset under shock-loading conditions; an aluminium alloy member will absorb three to four times as much energy before failure as will an equivalent steel member.

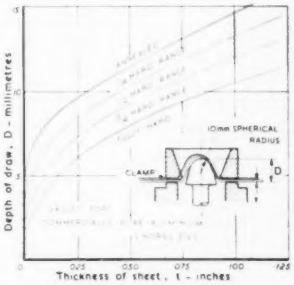
Energy absorption figures from tests on notched specimens in Izod or Charpy pendulum machines are, as with other metals, not directly applicable to design work. Again, the results from different alloys of aluminium are so varied, and so unrelated to performance under structural conditions, that this type of test is little used.

Ductility

In the last article it was said that the elongation of a tensile test piece at fracture was a useful but not a conclusive key to the ductility of an alloy.

Simple bend tests are widely used as a further indication of workability, and are laid down for sheet conforming to British Standard Specifications. A strip of metal with smooth, rounded edges is bent through 90 or 180 by hand or mallet over a steel former of prescribed radius. By using successively tighter formers, a minimum bend radius, at which there is no cracking, can be found, and is usually quoted as a multiple of sheet thickness t; for example, $1\frac{1}{2}$ t.

Samples of sheet that is intended for deep drawing or pressing are often subjected to the Erichsen cupping test (illustrated), in which a hemispherical punch is forced by a hand-operated screw against one side of the sheet, stretching the metal into a dome or cup. The depth of penetration at fracture gives an indication of the amenability of the metal to deep drawing processes involving stretching, though not necessarily to other processing operations. Much of the value of this test lies in its ability to show up two phenomena that will prevent successful drawing: a coarse grain structure produces roughness of the cup surface and, perhaps, an early failure through local thinning; and directionality, or variation of properties in relation to the direction of rolling, affects the shape of the fracture, which should be circular.



Erichsen Cupping Test

The next article in the series is concerned with creep and fatigue properties.

Figures for the properties discussed in these articles are listed in the Noral Data Sheet. Send for a copy, mentioning the name of this journal.

Monthly Light Alloys Section

TABLE II

B.S.1490	Nominal Composition (Principal Constituents only)	Specified Minimum Mechanical Properties: Ultimate Tensile Strength (tons per sq. in.)	Specified Minimum Mechanical Properties: Elongation on 2 in. (per cent)	Notes
LM 5-M	3.0-6.0 per cent Mg 0.3-0.7 per cent Mn	(S) 9 (C) 11	3 5	High corrosion resistance. Not suitable for intricate shapes and thin sections.
LM 6-M	10-13 per cent Si	(S) 10.5 (C) 12.0	5 7	Good corrosion resistance. Suitable for intricate shapes, thin sections and pressure - tight castings.
LM 10-W	9.5-11 per cent Mg	(S) 18 (C) 20	8 12	Good corrosion resistance. Suitable for simple castings where high strength and ductility are required.

S = sand cast. C = chill cast.

Included only as indication of type of alloy ; for fuller information see B.S.1490. A.D.A. Information Bulletin No. 17, *Aluminium Alloy Castings*, gives further details of casting alloys, their characteristics and uses.

is a factor which will have to be taken into consideration in all new tonnage. Admittedly standards in the United Kingdom have always been high and in many vessels flooding of the wing compartments in the machinery space is the critical case, but it is suggested that for a ship with a high freeboard ratio the flooding of a compartment just coming within the subdivision requirements might be more severe.

Secondly, it must be considered what effect any modification of the tonnage laws might have upon stability in certain classes of vessel. It seems possible that there may be some modification of the present regulations, which undoubtedly fix the size of engine room in many types of vessel and which are said to impede the present trend to lighter and more compact machinery, as the net tonnage is heavily penalised if the maximum propelling power allowance is not obtained. If revision of the rules is made, then it may well be that it will increase the trend towards lighter machinery. This, of course, will have its effect upon the centre of gravity of the ship, particularly in high-powered ships, and the consequent effect upon stability will require consideration. Should tonnage ever be measured on a displacement basis, as is sometimes suggested, the saving in structural weight due to using aluminium would be another factor in its favour.

Stresses in Superstructures.—The fact that the value of Young's modulus for aluminium is approximately one-third that of steel is often stated to be a disadvantage where structural work is concerned, particularly where deflection is a limiting factor, for example, in beams and watertight work generally. However, in superstructures of large vessels this low modulus can be usefully employed, as strain transmitted to the superstructures by the main steel hull girder causes lower stresses to be developed than in a steel superstructure, in fact, approximately one-third. This points to eliminating the necessity for expansion joints, which are an admitted nuisance in large liners and an unhappy solution, as they not only cause high stress concentrations but are seldom trouble-free.

Speed and Power.—Having used aluminium for all or any of the above reasons, a further advantage is gained in that less power is required for the same speed, or alternatively, speed may be increased with the same power. This is not an inconsiderable item, particularly with fuel costs rising as they are today, in addition to which the reduced cost of the lower powered machinery may in some instances actually offset the extra initial cost of the aluminium. The actual reduction in displacement and gross tonnage due to the reduction in beam, and possibly draught, means that a smaller ship is being built and on a basis of cost per gross ton there may, again, be a further saving.

It is often considered that the use of aluminium adds to the cost of the vessel, but in some instances it would probably show a reduction in initial building costs when account is taken of the reduced size of vessel and reduced horsepower. Further, there are the continual savings in the fuel bill and the reduced maintenance charges on the aluminium structure.

The Fire Problems.—In addition to the higher cost of the basic material, an apparent drawback arises from the lower melting point of aluminium alloy in complying with the latest fire regulations.

The Final Act of Conference of the International Convention on Safety of Life at Sea, 1948, lays down that for passenger vessels the main structure, including decks and deckhouses, shall be of steel, except in special circumstances where the administration may sanction the use of other material. When these findings were published it was realised by the aluminium industry that to ensure that the requisite fire standards were maintained they would necessitate a thorough examination of the whole problem of applying aluminium to ships' superstructures. With this in view a comprehensive programme of tests was undertaken to discover the most efficient means whereby aluminium, in the positions on board ship where such protection was necessary, could be protected from damage by fire.

The means of protecting aluminium structures divided themselves into two categories, namely :

(*a*) The application of a suitable insulating material applied directly to the structure, which, while giving the necessary degree of insulation from fire, does not provide a decorative finish;

(*b*) The substitution of plywood linings by asbestos board, which will receive paint finishes, veneers, etc., as are used with wood linings.

As the adoption of method (*a*) still requires a decorative finish, in the form of linings, for passenger work, it was felt that method (*b*) would prove the most economical. Nevertheless, such materials as are available which come within the regulations for fire grading are more expensive than normal plywood construction. However, there is a very important proviso in the regulations which provides that if internal divisional bulkheading and linings of a "B" class grading are used, no fire detection or sprinkler systems need be fitted in the accommodation and service spaces. If fireproof asbestos board is to be used to protect aluminium, it would appear logical to use this type of material for all

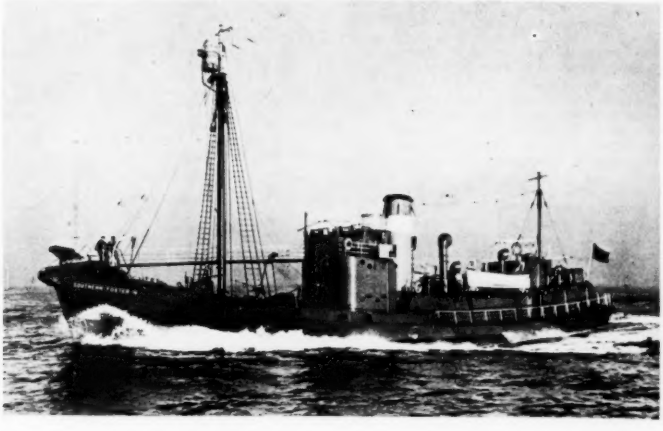


Fig. 2—The whalecatcher "Southern Foster," with aluminium deckhouse, funnel and structure aft of casing

other bulkheading and linings in the ship and thus effect a financial saving by not fitting a sprinkler system. Admittedly this method of fireproofing is only now beginning to be adopted in some British vessels, although American passenger ships adopt this system entirely. The series of tests undertaken, although not completed, are quite promising to date and it is hoped that a full report will be published shortly.

Another development, using this type of material sandwiched between two very thin sheets of aluminium alloy, gives a very robust bulkheading material, lighter than plywood and having the necessary fireproof qualities. This fireproof material in its very lightweight form does not possess sufficient strength to be used alone for bulkheading or linings, but when used in combination with aluminium it reduces weight and the surface can, of course, be painted. Development work is proceeding to produce anodised finishes on the aluminium to give a lasting and attractive surface particularly suitable for crew spaces, and possibly also tourist-class passenger accommodation.

Aluminium in the "United States"

The question of the suitability of aluminium for ships' structures in combination with this fireproof material, in accordance with the most rigid requirements, is amply illustrated by the liner *United States*, in which:

1. Over 2,000 tons of aluminium is used; the largest single aluminium structure in the world.
2. The entire ship is constructed in full accordance with Sub-Chapter M, U.S. Coast Guard Safety of Life at Sea requirements, the most rigid marine fire regulations in the world.
3. No other bulkheading material is used.

The use of aluminium in this vessel is by far the most important marine application of aluminium to date. While some of this tonnage will undoubtedly be used in fittings, such as davits, boats, furnishings, etc., the majority of the aluminium has been incorporated in the superstructures.

It is to be hoped that full technical information will ultimately become available but, meanwhile, the following facts are known:

On an overall length of 990 ft. the moulded beam is 101 ft. 6in. For comparison the *Queen Mary*, with an overall length of 1,019 ft. 6 in., has a beam of 118 ft. The total passenger numbers are given as 2,000, which is only slightly less than the passenger accommodation in the British vessel, and the gross tonnage is listed as 51,500 as compared with more than 80,000 for the British ship. The aluminium superstructure extends down to the promenade deck and no expansion joints are fitted, these not being considered necessary owing to the lower modulus of the material.

Although the figures for gross tonnage cannot be compared directly with British measurement, it would, nevertheless, appear that in this instance it has been possible to produce a smaller ship to carry out the same service as the Cunarders. It is true, of course, that the beam has been limited because of the fact the vessel must be able to pass through the Panama Canal, but there would seem to be no doubt that the reduction in beam was only made possible by the use of aluminium alloys.

A major difference in British and American marine practice is that the Americans mainly use the alloy 61ST, which is a heat-treatable alloy comparable to the British alloy H.10. Rivets used are of the same material and ageing after the second heat-treatment is delayed until driving by storing the rivets in refrigerated containers until they are ready to be used. The superstructures on the *United States* are probably principally riveted as it is stated that 1,200,000 aluminium rivets went into her building.

This remarkable new vessel is to go into service during the summer of next year and her maiden voyage will be awaited with very great interest on both sides of the Atlantic.

Other Possible Applications

Apart from superstructures and deckhouses in passenger ships, which are now absorbing appreciable tonnages of aluminium, its use is continually expanding in other directions, and there are other instances where aluminium could be economically adopted but which have not yet been considered.

During the past 12 months considerable attention has been paid to the examination of vessels with aluminium deckhouses, etc., which have been in service for up to four years; these are principally in small ships, often trawlers, where conditions are very severe and it has been found that aluminium alloys are comparatively unaffected when exposed to the conditions which cause very severe corrosion in steel. In single funnel casings it was found that although the funnels were heated to temperatures of over 200 deg. C. and were continually wet and dry owing to the low freeboard of these vessels and bad weather conditions, this had practically no corrosive effect, although in similar circumstances the life of steel funnels was comparatively short. From this it would appear that structures on board ship, particularly smaller ships, where heavy corrosion occurs due to similar conditions, could be replaced with aluminium with considerable advantage. The author has in mind boiler and engine casings, ventilator coamings, etc., which can suffer considerably.

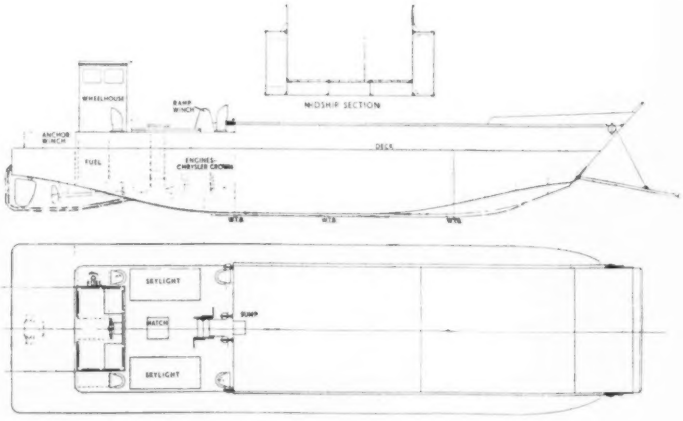
The second section of this paper, which deals with the working of light alloys in the shipyard, will be published in next week's SHIPPING WORLD.

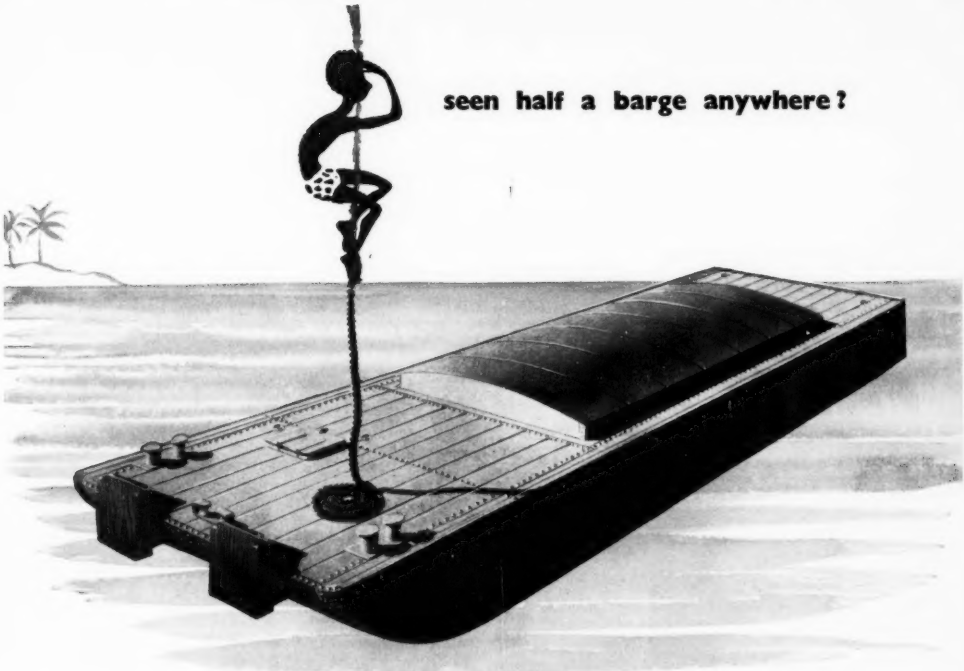
The British Welding Research Association has published "Beam and Column Connections—Recommended Design for Metal Arc Welded Building Structures" (No. T.28, price 2s. 6d.).

An illustrated wall chart entitled *Faults in Arc Welds*, indicating common faults that can occur in the metal arc welding of steel, has been published by the British Welding Research Association (price, 7s. 6d.). Of about 3 ft. by 2 ft. with 37 half-tone illustrations, the chart is printed in two colours and is mounted on strong backing board suitable for direct mounting to the walls of welding ships and offices, etc.

Light Alloy Lighter for Pakistan

Among the many orders received from overseas by the Fairmile Construction Co., Ltd., is one for two self-propelled ramped cargo lighters from the Royal Pakistan Navy, the Karachi agents being Ghulamali G. Chagla & Company. Both craft are being built on the Thames by Watercraft, Ltd., under the supervision of the Fairmile organisation. All materials, including BA27 and BA25WP light alloys, together with the production drawings are being supplied by Watercraft. Plating for the hulls of the lighters is $\frac{1}{16}$ in. thick, while the lowering ramp is built of $\frac{1}{4}$-in. plate sheathed with hardwood. Two Chrysler-Crown petrol engines with 1.95-1 reduction gear are to be installed in each vessel. The propeller shafts are monel metal and the propellers are of light alloy. The builders are also executing orders for a number of light alloy motor and pulling lifeboats, and dinghies, all of which are for export





Up on the Congo, local labour is busy assembling some remarkable barges sent out from Britain. First, these 60-ton craft were despatched in halves, for on-the-spot assembly. Second, every bit of every barge is made from extrusions in T.I. Aluminium Alloys (sole exception being the hatch covers).

Several points here warrant attention nearer home than the Congo. The engineers concerned, Messrs. Thorpe Brothers (Bessborough Works) Ltd., have used the manipulative advantages of aluminium with such skill that:—

(a) The cost of construction compares favourably with that of steel.

(b) Assembly has been immensely simplified.

(c) Waste from short ends and off-cuts has been eliminated.

(d) It has been possible to use normal shipyard labour.

(e) Ease of handling (including road transport) has been greatly increased.

Add to these the standard advantages of T.I. Aluminium Alloys—lightness, strength, resistance to corrosion—and judge whether Messrs. Thorpe Brothers, with their client OTRACO, have introduced a valuable new system of marine construction. T.I. Aluminium (who collaborated on the job) are inclined to think so and have produced a booklet on it and will gladly send you a copy.

on this kind of job they . . .

COAL AND OIL

THE GROWTH OF THE OIL INDUSTRY

THE SPEECH made at the launch of the *Velletia* by Mr. J. W. Platt, a managing director of the Royal Dutch/Shell Group, consisted largely of an admirable survey of the oil industry and its problems today. Mr. Platt pointed out that the carriage of oil by sea is only one facet of the many sided activities of the petroleum industry, and this in its turn is only one facet of the larger problem of supplying the world's requirements of energy. The world's demand for energy is now supplied, roughly, in the proportion of two-thirds by coal, one quarter by oil and one-twentieth by water power. The demand grows insistently, during the last 6 years at the rate of 5 per cent per annum, and the weight of this growing demand is falling increasingly on oil. Since 1946 the world's consumption of oil has increased by 70 per cent as against an increase of 7 per cent for coal and 10 per cent for hydro-electric power. Considering the world position in oil, excluding the U.S.A. and the U.S.S.R., Mr. Platt said that the figures can only be interpreted to mean that in this area the consumption of oil will go up during the next five years by at least one-third, and that amounts to the startling figure of 60,000,000 tons. He stressed the huge amount of capital which this expansion will require, quite apart from the cost of maintenance and the replacement of existing plant. The additional refinery capacity will cost not less than £650,000,000. For transport by sea 350 more standard tankers will be needed, and these at present prices will cost £300,000,000. Distribution facilities, conservatively estimated at £5 a ton, will add another £300,000,000 to the bill. The British share in 1950 of this large part of the world's petroleum business was 40 per cent.

The Question of Tankers

Mr. Platt pointed out that by 1956 no less than 4,000,000 tons of tankers will be 25 years old or over. The replacement cost of these ships today is £200,000,000, and he doubted, in view of their age, if even one-third of that amount had been covered by allowable depreciation reserves. The balance had somehow or other to be found out of current funds. Since the war there has been a persistent shortage of tankers which has at times strained the supply position, and has been reflected in the excessive freight rates which have to be paid, as in the case at this moment, at periods of peak demand. This is still the position, and the industry does not like it at all. It can only be overcome, however, by building until demand and supply are properly equated. The increase in trade over the next few years calls for an additional 6,000,000 tons deadweight; the replacement of obsolete vessels calls for a further 4,000,000 deadweight tons. There is now building from 1952 to 1956, i.e., known to be under construction or actually on order, 10,000,000 deadweight tons. It would seem, therefore, that the gap may be filled. "But," he said, "we can never be too sure, as demand so far has kept well ahead of our calculations." On the whole he felt sure that we could look forward to a continuance for some years of the present rate of building, about 2,000,000 tons a year, which seemed to be about as much as the yards of the world could handle.

Advice to Charter Operators

Mr. Platt mentioned the notable relief to the industry given by the charter tanker operator. Of the total of 28,000,000 tons of tankers now afloat, these interests control something like 13,000,000 tons. The oil industry has welcomed and encouraged them, and there is still room for more. But he suggested that in their new building programmes they should now begin to think carefully about the world's needs for larger tankers. The number of these which can be economically used is necessarily limited, as there are only certain runs available to them and only a limited number of ports with the facilities they require. He did not say that the point had yet come, but he urged some caution. In view of the high proportion of tankers for charter operation with capacities of over 20,000 tons deadweight which are now being built, Mr. Platt's words are timely and of interest. If there is any prospect of these large tankers being unemployed, charter operators will no doubt be wary about building them. In fact, however, the majority of such vessels laid down today are the subject of a long time charter before building commences and the discontinuance by the oil companies of this practice would no doubt stop the flow of orders.

Shorter Notes

INFORMATION has been received from Cory Brothers & Co., Ltd., that coal prices at Gibraltar are now 199s. per ton, trimmed, less 2s. 6d. rebate when applicable. The corresponding figure for Oran, Bona and Algiers is now 198s. per ton.

FOREIGN EXPORTS of coal through the Port of Sunderland for July, August and September amounted to 54,250 tons, 27,435 tons and 36,850 tons respectively. The figures for exports of other cargoes were 12,372 tons, 9,203 tons and 6,152 tons.

THE ESTABLISHMENT of a new office to coordinate all of the company's worldwide transportation activities has been announced by Standard Oil Company (New Jersey). The staff, which will begin operations on January 1, will be headed by Mr. John J. Winterbottom as coordinator, and Mr. Loren F. Kahle as deputy. The principal office of the Transportation Coordinator will be in New York. Contacts with affiliates in the Eastern Hemisphere will be maintained through a London office.

OFFICIAL NOTICE

New Company

MACLAINES SHIPPING, LTD.—Registered October 23. To acquire, improve, develop and turn to account steamships and other vessels, and to carry on business of shipowners and managers, etc. Nominal capital: £100 in £1 shares (80 "A" ordinary, 20 "B" ordinary). Directors: Not named. Subscribers: R. G. Fielder, Crowland House, 133 Winchmore Hill Road, Southgate, London, N.14; and C. E. Wibberley, 44 Prince George Avenue, Southgate, London, N.14.
[Information from *Jordan's Daily Register of New Companies*]

Increase of Capital

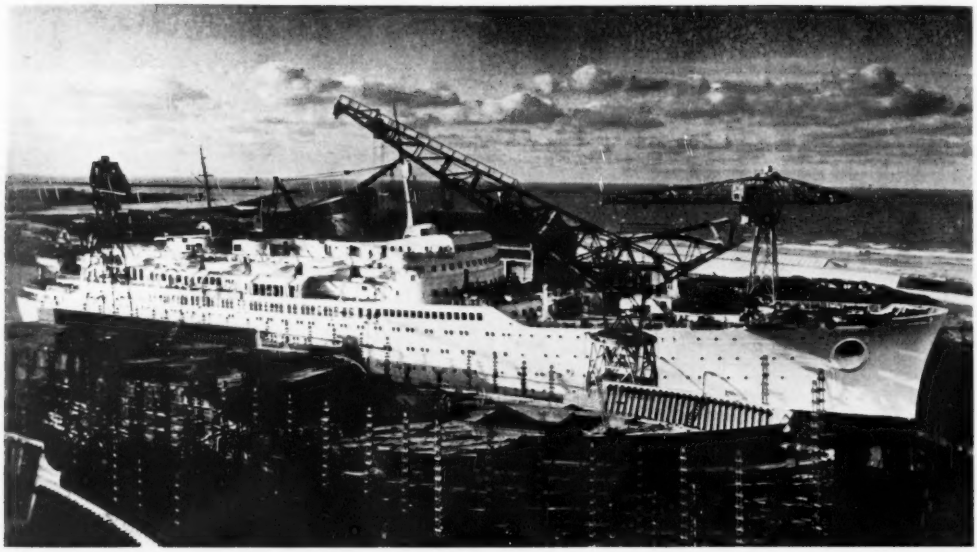
ALSCOT SHIPPING CO., LTD., 120 St. Vincent Street, Glasgow, C.2. Increased by £149,900, in £1 ordinary shares, beyond the registered capital of £100.

CLANAIR, LTD., air transport, etc., 2 St. Mary Axe, London, E.C.3. Increased by £49,900, in £1 shares, beyond the registered capital of £100. Clan Line Steamers, Ltd., hold practically all the issued shares.

BOOK REVIEW

Shipshape and Bristol Fashion, by John C. G. Hill. (Charles Birchall & Sons, Ltd., 17 James Street, Liverpool, 2. Price, 10s. 6d.)

This well-produced book is the story of the Bristol City Line and of Charles Hill & Sons, Ltd., shipowners and shipbuilders of Bristol, firms which have had a continual existence of some 250 years. Mr. Hill, who is a director of both firms, reveals a gift for telling a story of absorbing historical interest, and that story is handsomely illustrated in colour as well as monochrome. From the days of slaving and privateering, the story runs on through the commercial heyday of sailing ships to the advent of steam, and is brought right up to date with the experiences of shipping and shipbuilding in Bristol during the two world wars and the years between.



PASSENGER LINER "FLANDRE"

LAUNCH OF NEW FRENCH LINER FOR TRANSATLANTIC PASSENGER SERVICE

A NOTABLE event for the French maritime industries occurred on October 31 when Mme. Jean Marie, wife of M. Jean Marie, president of the Compagnie Générale Transatlantique (French Line), launched the 20,500 tons gross twin-screw turbine steamship *Flandre* from the Dunkirk shipyard of the Société des Ateliers & Chantiers de France. The ceremony was also attended by M. Morice, the French Minister of the Merchant Marine, M. Pinay, the Minister of Public Works, and several distinguished members of the Government and former Cabinet Ministers. Although a final decision is still awaited as to which services the *Flandre* and her sister ship *Antilles* will undertake, it is expected that they will augment the French Line's services to the West Indies and also start a new service to the Gulf of Mexico, Havana, New Orleans and Vera Cruz. Both ships are due to be commissioned in 1952. The *Antilles*, which is now fitting out at the Arsenal de Brest, was also designed by the Chantiers de France, and is identical in all respects with the *Flandre*, except for the boilers. Both vessels were originally intended for the West Indian services, but during construction their design was modified to enable them to be operated on the Havre-New York service during the season. Their speed of 23 knots in service and 25 knots full power enable them to take turn with the *Liberté* on this route.

Unusual Design

A representative of THE SHIPPING WORLD who attended the launching was impressed by the fine appearance of this vessel. Particularly noticeable on the stocks was the bulbous forefoot, which can be seen in the accompanying illustration. After careful model experiments in the Paris Testing Tank it was decided to adopt a bubble-shaped stem which extends beyond the forward waterline perpendicular. The stern lines of the hull are equally unusual, owing to the fact that the skeg of the keel is placed some 82 feet in front of the after perpendicular, providing a flat bottom stern-way clear from the propellers. The propeller shaft stays have been designed with special A-brackets, incorporating athwartship fins designed to direct the water stream against the propellers in order to achieve maximum efficiency.

Extra height and accommodation has been made possible by the extensive use of light alloys, of which about 150 tons have been incorporated into the ship. Light alloys have been used for two tiers of tweendecks, as well as for the funnel, masts, lifeboats, and ventilation fan houses. The alloys used are A.G.5 (Duralinox) for plates and sections and A.G.6 for moulded materials.

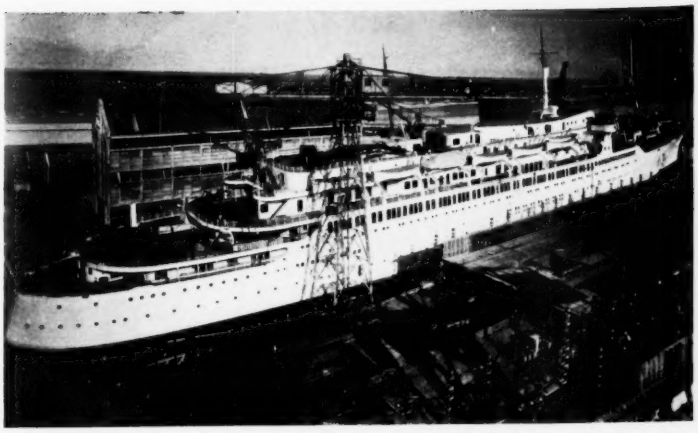
Principal Particulars

The principal particulars of the *Flandre* are as follows:—

Length overall	597 ft.
Length b.p.	569 ft.
Breadth moulded	80 ft.
Depth to promenade deck	56 ft.
Draught	26 ft.
Passengers:	
De luxe	14
First class	389
Cabin class	285
Tourist class	97
Total	785
Officers and crew	361
Total complement	1,146
Cargo capacity	2,800 tons
Displacement	20,300 tons
Gross tonnage (about)	20,500 tons
Normal horsepower	36,000 s.h.p. at 180 r.p.m.
Normal speed	23 knots

The *Flandre* has been built under the supervision of Bureau Veritas to conform with the requirements of the 1948 London Convention for the Safety of Life at Sea. The hull has been constructed on the combined system of longitudinal and transverse framing, with the shell seams and frame connections riveted and the remainder of the structure welded. Prefabrication was largely used in the construction, the average weight of prefabricated unit being 25 tons. The hull is divided into six watertight compartments and affords sufficient stability with two compartments flooded.

Accommodation for the first-class passengers is provided on the promenade deck, while de luxe and semi de luxe cabins for 14 persons are situated on the boat deck aft. All



Another view of the French liner "Flandre" on the stocks at the Ateliers & Chantiers de France, Dunkirk

first-class cabins are fitted with wash basins, toilets, and showers, while certain of the cabins have adjoining bathrooms, as also have the de luxe cabins. Collective bathrooms are provided for the remainder of the first-class passengers and the whole of the cabin-class accommodation. The cabin class accommodations are equipped with one or two wash basins, according to the number of berths in each cabin. A feature of the accommodation is the use of a large number of removable, concealed and Pullman berths. This measure will enable more space to be provided for passengers during the winter months, when the demand on the North Atlantic passenger traffic is reduced.

As in all C.G.T. passenger liners, special care has been taken with the public rooms. The first-class passengers are well catered for, with a dining saloon, lounge, cosy bar and hairdressing saloon. The smoking room has a luminous dance floor. There are also a massage room with mechanical therapy equipment, a children's playroom and sheltered observation galleries. An exterior swimming pool with lido is also provided. The cabin-class accommodation has a dining room, lounge, writing room and library, smoking room with dance floor, children's playroom and a collapsible exterior swimming pool. The tourist-class passengers are provided with a dining saloon and a small lounge. Open and covered promenade decks are available to each class, the first-class passengers having a sports deck equipped for deck games and pigeon shooting.

Accommodation for the officers, crew and civilian staff is in accordance with the Seattle Agreement. The officers have single-berth cabins and are provided with a dining room and smoking room in the front of the bridge house. Each of the various departments has its own dining saloon, the crew also having a bar, lounge and collapsible swimming pool. Every endeavour has been made by the owners to provide the maximum comfort for the officers and crew. Three lifts are installed for the exclusive use of the passengers, one lift being fitted for the stewards' department and a further lift installed to carry the engineer officers from the boat deck to the engine room.

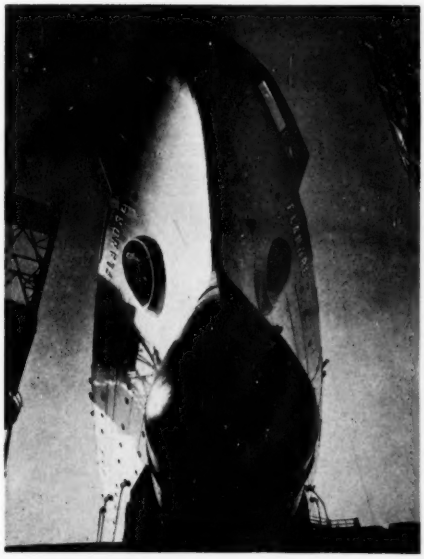
Ventilation and Air Conditioning

Careful consideration has been given to the ventilation and air conditioning of the vessel, which is divided into five separate and independent compartments for this purpose. Should the need arise the services in one compartment could be stopped without in any way affecting the other four compartments. Each compartment has a central station equipped with air fans, strainers, conditioners, heaters and coolers. All the first-class cabins and decorated rooms, together with the cabin-class and tourist-class dining saloons, officers' accommodation, crew's dining room, and hospital are air conditioned, the remaining quarters being normally ventilated. About half the vessel is air conditioned, enabling a temperature of 84 deg. F. with 55 per cent dampness to be maintained when the outside temperature is 95 deg. F. with 85 per cent dampness. The air conditioning is carried out on the Carrier system, which retakes air from some public rooms, in order to save the refrigerating power, but does not retake air from the private cabins. This avoids the carrying of germs and unpleasant smells from one cabin to another.

For fire protection bulkheads are built to conform with Method 3 of the 1948 London Agreement. All the vertical walls, and in particular the staircase, are isolated against fire to permit safe evacuation of the vessel in an emergency. The alleyway bulkheads are also isolated to make easier and safer evacuation. An installation of electric fire detection is fitted for all inhabitated spaces. The other compartments, such as bunkers, holds, tweendecks and store rooms, are provided with a detection installation working by aspiration of air passing in front of a photo-electric cell. In the uninhabited compartments the installation also permits the forcing back of carbon dioxide in case of fire.

Fire alarms are fitted throughout the vessel and are connected, together with the fire detection system, to a "security control," where a fireman is on watch day and night. A network of security telephones with direct lines, working independently from the ship's automatic telephone system, is fitted and alarm hooters are provided throughout the ship. There is also a header equipped with 91 main and secondary cupboards, distributed at various points in the vessel, enabling the simultaneous use of two hoses to

(*Continued on page* 333)



The bulbous forefoot of the "Flandre"

MOTOR FERRY "KALMARSUND VI"

DOUBLE-ENDED VESSEL FITTED WITH NOHAB DIESEL

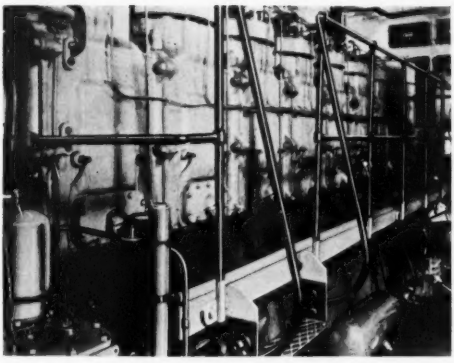
THE island of Oland, off the coast of Southern Sweden, has been increasing in popularity as a tourist resort, the number of cars transported to the island in June and July of 1950 being a 30 per cent increase over 1949. To assist in alleviating the problem of carrying the tourists and their cars a new ferry has been introduced to the service. She is the *Kalmarsund VI*, a double-ended motor vessel, owned by Angbatsaktiebolaget Kalmarsund. Built by Kalmar Skeppsvarv and designed by the yard's chief engineer, Gunnar Byfors, the *Kalmarsund VI* has a Nohab diesel engine so arranged that either or both of the propeller shafts can be driven simultaneously.

The vessel is constructed to the requirements of Svenska Fartygsinspektionen and is reinforced for navigation in ice. There is a propeller and rudder both fore and aft. Her principal characteristics are:—

Length overall	137.8 ft.
Breadth, moulded	35.1 ft.
Depth, moulded	14.8 ft.
Draught from upper keel	10.2 ft.
Draught from lower keel	11 ft.
Freeboard, midships	4.6 ft.
Sheer	23.6 in.
Rudder area	34.5 sq. ft.

The car deck is unsymmetrical, with a deckhouse on one side only, machine cover, post office and lavatories. At each end of this deck there are stairs leading to the passenger deck above and to the saloons on the deck below. The passenger deck, about 13 ft. above the car deck, has a spacious deckhouse with two saloons providing seating accommodation for 132 persons. There are seats for about 100 passengers along the rail of the deck. Two further saloons are arranged below the car deck. The larger of the two, with 70 seats, houses a bar adjoining the pantry and galley. The other saloon on this deck has seating arrangements for 50 persons.

At the end of the larger saloon on the lower deck there are two cabins for the galley staff, while a messroom for the crew is arranged on the other side of the ship. The master's cabin is housed in the smaller of the two lower saloons. A wheelhouse is situated at either end of the boat deck. In front of each wheelhouse is a passage, while between them there is a deckhouse with cabins for the remaining seven members of the crew, including the mate and an engineer.

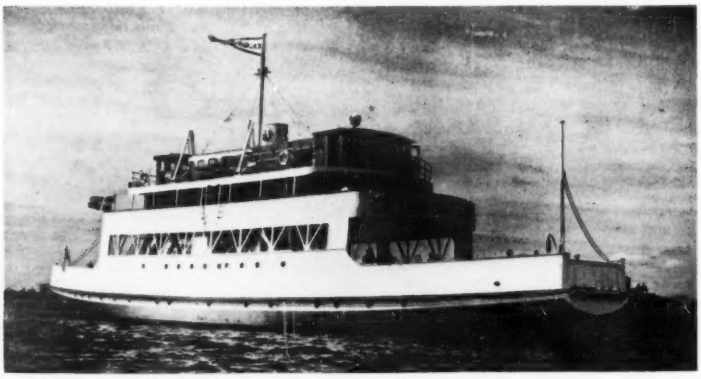


The Nohab ML-7 diesel engine

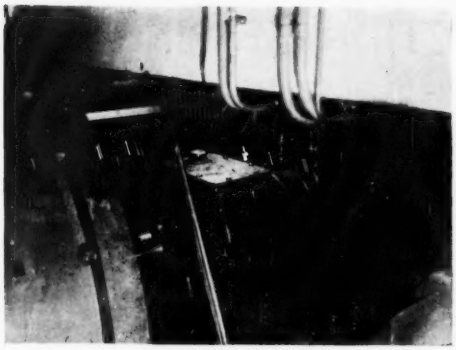
Before the decision was taken as to the type of propelling machinery to be installed six alternative methods of motive power were considered. The final choice was for a 7-cylinder direct-reversible Nohab diesel engine built by Nydqvist & Holm A/B, of Trollhattan. Of the Nohab ML-7 type, the engine has an output of 1,050 s.h.p. at 250 r.p.m. It is erected in direct line with the two propeller shafts, so that one or both propellers can be driven simultaneously with the aid of two "Airflex" clutch couplings. These couplings, arranged at each end of the engine and manufactured by Crofts, Ltd., of Bradford, are so dimensioned that the whole output can be transmitted by either coupling. They are operated by compressed air from the manœuvring side of the engine. In addition to improving the manœuvring qualities of the vessel, these couplings make it possible to use the total output of the engine during service in severe ice conditions. Water for the engine cooling system is stored in a large bottom tank, the water being returned to this tank after completing one cooling circuit of the engine. Cooling coils are fitted in the tank to enable the water to be kept at the desired temperature during summer months.

The Steering Gear

Each of the two rudders is operated by an electro-hydraulic steering gear by Atlas-Werke, of Bremen. The locking of the rudder not in use in its midship position can be effected by hydraulic remote control directly from either of the two wheelhouses. The oil pump of the steering machinery is driven by



A three-quarter view of the motor ferry "Kalmarsund VI" on trials



Thrust bearing with air shaft seal and Airflex clutch coupling

two electric motors, one of which is a standby unit brought into operation by a simple switch movement. In the event of a failure of the two diesel-driven generators, emergency power can be obtained from a storage battery. Emergency hand steering gear for the rudders is fitted in the wheelhouses.

The signalling devices installed in the ferry include two electric engineroom telegraph units of the "Powerrotor" type manufactured by Robinson, Evershed. Messages for the connection or disconnection of either propeller are transmitted by these units, in addition to the normal engine instructions. Other equipment fitted in the vessel includes an automatic oil-burning heater with Exo type hot water unit, an AGA oven, telephone installation and projectors, etc.

Power requirements of the *Kalmarsund VI* are provided by two Lister diesel engines, each of 40 h.p. at 1,000 r.p.m., driving two 25-kW 115-volts generators. One of the units is a standby, the output of each engine being sufficient for the needs of the vessel. All auxiliary equipment, such as pumps, fans and compressors, etc., are electrically driven. The emergency storage battery, already mentioned, is a Nife accumulator battery of 190 Ah 110 volts.

On trials the *Kalmarsund VI* attained a speed of 11.2 knots with two propellers in use and the engine developing 850 s.h.p. With only the rear propeller in operation a speed of 10.6 knots was reached, the engine then having an output of 652 s.h.p. The speed of the engine in both cases was 250 r.p.m.

RECENT PUBLICATIONS

A pamphlet has been issued by Crompton Parkinson, Ltd., giving details of an economical and quick method of laying deck planking by the use of Nelson stud welding. Brief details are also given of other applications of Nelson stud welding in shipbuilding.

The National Physical Laboratory is preparing a new short series of pamphlets describing the units and standards of measurement employed there. The first of the series, dealing with the fundamental units of length, mass and time, has recently been published. The pamphlet also defines the derivatives from these fundamentals, namely the units of volume, density and specific gravity, and deals with the acceleration due to gravity, as well as with force and pressure, with particular reference to barometric pressure. Both the British Imperial system and the International Metric system are described.

An idea of the accuracy attained in the measurement of standards can be obtained from the section on time. Describing precision clocks, the pamphlet says that owing to the nature of the radio signals (broadcast through Rugby from Greenwich), the precision of their comparison with the clocks is limited to a few tenths of a thousandth part of a second, but the intercomparison of the clocks themselves can be carried out considerably more accurately.

NEW PETROLEUM POWER BARGE

Special Design for River Thames

A 518-tons d.w. all-welded power barge, *Esso Abingdon*, with the most up-to-date features for a craft of its kind, was launched from the shipyard of Henry Scarr, Ltd., at Hessle, near Hull, on October 29. The owners, Esso Petroleum Co., Ltd., had the ship specially designed for the transport of petroleum products in bulk on the River Thames. A special feature of the barge is the living accommodation for the crew. The captain, chief engineer, mate, second engineer and one seaman are each accommodated in separate cabins. These are furnished with a bunk, settee, desk, wardrobe, washbasin with hot and cold water, and electric heating. Toilet facilities include shower baths and foot tub. There is also a messroom and an all-electric galley. The domestic water is carried in a tank built into the funnel and hot water is obtained from a boiler heated by the electric regenerating engine exhaust. The cargo of 500 tons of petroleum spirit, the maximum permitted under P.L.A. regulations, is kept in seven tanks, four of 75 tons, two of 63 tons, and one of 74 tons. The cargo space is separated by cofferdams forward and aft, and by spaces at the sides and underneath the tanks. This feature will prevent any possibility of leakage of oil into the river in the event of shell damage.

There are two cargo pumps located in the after cofferdam or pump room. Each pump has a capacity of 175 tons per hour to enable complete discharge of the vessel in 90 minutes. The ballast pump, fitted in the same compartment, is capable of filling the forward ballast tanks in similar time to ensure the maintenance of an even keel over the dispatch berth. Arrangement of the suction lines and tank shut-off valves will permit the handling of three grades of cargo at one time.

The main machinery of the *Esso Abingdon* is a 4-cyl. Crossley diesel engine, type H.R.L.4 of 400 b.h.p. at 500 r.p.m., driving a single propeller through a 2 : 1 reverse reduction gearbox of SLM hydraulic type by Modern Wheel Drive, Ltd. The auxiliary machinery is composed of three Crossley diesel engines, type B.W.3, each of 45 b.h.p. Two of these engines are clutch coupled to the cargo pumps and the other is coupled to a 20-kW 110-volts flameproof generator which is clutch coupled to the ballast pump. The machinery installation is complete with an electrically driven pumping and air compressing auxiliaries, and battery charging units. All electrical appliances are of fireproof design to comply with the latest P.L.A. regulations for this type of craft.

The principal dimensions of the *Esso Abingdon* are length overall 168 ft., breadth 32 ft. 6 in., draught 8 ft. 6 in., and the service speed will be 8½ knots.

The Late Sir Henry Grayson

The death has occurred at the age of 86 of Sir Henry Mulleneux Grayson, until recently chairman of Grayson, Rollo & Clover Docks, Ltd., and a former Director of Ship Repairs at the Admiralty. Sir Henry, a well-known figure for over 60 years in the shipbuilding and repairing industry on the Merseyside, entered the family firm of H. & C. Grayson, Ltd., on leaving school. In 1904, on the death of his father, he became head of the company and also managing director of the Garston Graving Dock & Shipbuilding Co., Ltd., and of Graysons, Ltd. During the First World War he was a member of the Shipbuilders' Advisory Council to the Admiralty and from 1916 to 1919 was honorary Director of Ship Repairs. Sir Henry entered Parliament in 1918 as Conservative-Unionist member for Birkenhead West, representing that constituency until 1922. In 1920 he was made a C.B.E. and was promoted K.B.E. in the same year. Two years later he was created a Baronet. A former chairman of the Liverpool Shipbuilders' & Engineers' Association and a member of the Committee of Lloyd's Register of Shipping, Sir Henry had been a member of the Institution of Naval Architects since 1888. He was also a Liveryman of the Worshipful Company of Shipwrights. Sir Henry was a director of a number of companies, including British Wheeler Process, Ltd.

A LARGE number of marine orders for British Polar diesel engines was received by British Polar Engines, Ltd., during July, August and September. Among these are one auxiliary generating set of 230 b.h.p. and four of 450 b.h.p., all at 600 r.p.m., for a vessel for the New Zealand Shipping Company, to be built by John Brown & Co., Ltd., Clydebank. Three further sets each of 390 b.h.p. at 600 r.p.m. have also been ordered for those owners for each of two ships to be built at the same yard.

TWIN DIESEL REDUCTION GEARING

LARGE INSTALLATION BY POWER PLANT COMPANY

A TWIN diesel reduction gearing unit for the motor ship *Cornwall*, building at the Govan yard of Alexander Stephen & Sons, Ltd., has been constructed by the Power Plant Co., Ltd., of West Drayton, Middlesex. The unit is believed to be the largest of its type yet constructed in this country.

The *Cornwall*, which is under construction for the New Zealand Shipping Co., Ltd., is a ship of some 6,850 tons gross. Her two diesel engines will be of Sulzer type, constructed by the shipbuilders. The input to the gearing is 4,000 h.p. at 217 r.p.m. on each input shaft, and the 8,000 h.p. output is at 100 r.p.m. The pinion shaft will be coupled to the engines by fluid couplings, which are being supplied by Barclay, Curle & Co., Ltd. These couplings are 3,005 mm. in diameter.

The overall dimensions of the gearing base plate are 17 ft. 2 in. by 21 ft. 3 in., the length over shaft flanges being 19 ft. 2 in. The overall height is 10 ft. 8 in. The centre lines of the engines and input shafts are 12 ft. apart, and the three shafts are 5 ft. 2 in. above the bottom of the base plate.

The gear casing was supplied by the shipbuilders. It is of composite fabricated construction, the bearing housings and thrust block housings being of cast steel, welded into the main plate construction of the casing.

Pinions and Gear Wheel

The pinions consist of steel rims, of 55-tons tensile alloy steel, shrunk on to 35-tons tensile steel forgings. These latter are bored to accommodate the transmission shafts from the couplings, as described below. The gear wheel is of a built-up design, with a rim of 35-tons tensile rolled steel. The teeth are of the double helical hobbed continuous type, the pitch being 2 D.P., the spiral angle 30 deg., and the pressure angle 20 deg. The active face width is 36 in., and the overall face width 40 in. The pinions have 91 teeth and the wheel 196 teeth.

The wheel shaft is of 35-tons tensile steel, and incorporates an integral thrust collar for the thrust block. The pinion shafts are bored, and the transmission shafts from the hydraulic couplings pass through them. A drawing sectioned through one of these shafts is reproduced on the following page. The pinion shaft and transmission shaft are coupled together at the after end of the installation by a turbo-type tooth coupling. This gives the pinion shaft some play in a fore and aft direction, and allows the pinion to centralise itself with the wheel when the latter, with its shaft, moves from the ahead to the astern position, due to the clearance in the thrust block. The clearance is about 0.040 in. This arrangement ensures uniform loading of the gear teeth in either position, and avoids the possibility of thrust being imposed on the fluid couplings. The 6-in. holes through the centres of the transmission shafts are for the supply of fluid to the hydraulic couplings.

The bearings consist of cast steel shells lined with Admiralty grade white metal. The sizes are as follows:

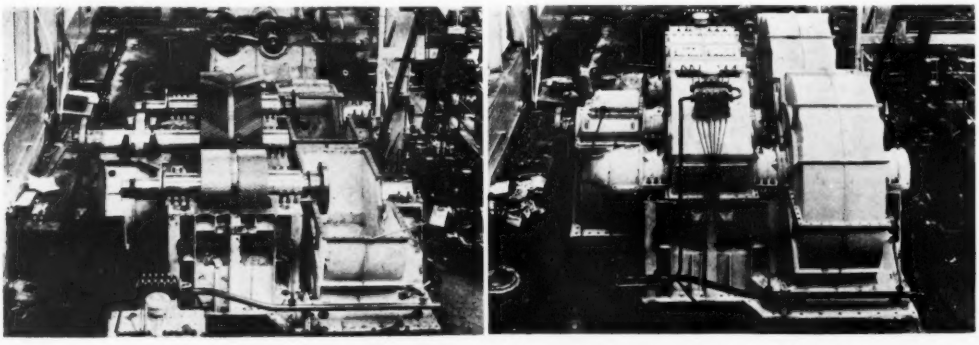
Pinion shaft bearings :	
Nearest engine	19 in. diameter, 20 in. long
Between coupling and pinion	22 in. diameter, 20 in. long
Free end	19 in. diameter, 20 in. long
Wheel shaft bearings (2 off)	20 in. diameter, 20 in. long

The thrust block has a collar diameter of 42½ in. The thrust load (estimated) is 150,000 lb., carried over a surface of 650 sq. in. at a pressure of 231 lb. per sq. in.

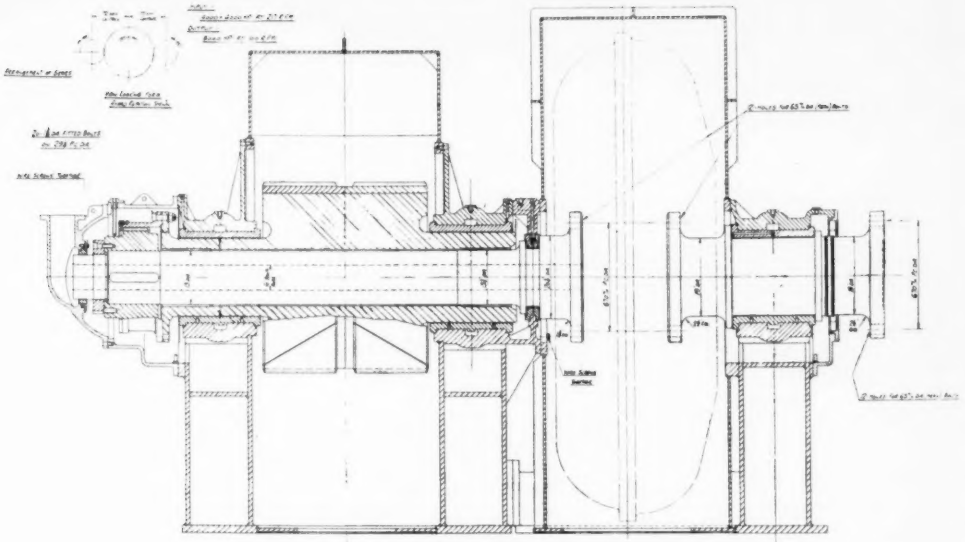
Early Installations

The Power Plant Co., Ltd., has a long history of gear cutting, and this may also be claimed of its connection with shipping, although marine gearing forms only a very small part of the total output of the company. In 1909 the firm built the gearing for the first ship to be fitted with a geared steam turbine. This was the famous *Vespasian*, which had a 20:1 single-reduction gear transmitting 1,000 h.p. Among warships supplied with reduction gearing during the First World War were two battleships of the *Queen Elizabeth* class, the *Queen Elizabeth* herself and the *Malaya*. These, incidentally, were the first oil-burning battleships. An interesting pair of ships equipped with Power Plant gearing were the French cruisers *Duquesne* and *Tourville*. These ships, which were quadruple screw vessels, developed 33,000 h.p. per shaft—a total of 132,000 h.p. Each ship had eight sets of gearing, reducing from 2,880 to 288 r.p.m. Another well-known French ship equipped with the company's gearing is the flotilla leader *Le Terrible*. This ship, with a designed horsepower of 74,000, achieved 100,000 h.p. on trials, giving her a record speed of over 45 knots.

The Power Plant Company manufactures much of its own gear cutting machinery. A double hobbing machine built by the firm in 1924 is still giving satisfactory service. This machine can take gears of up



The gearing unit, with the casings for the hydraulic couplings, in the works of the Power Plant Co., Ltd., during assembly (*left*), showing the gears, and complete (*right*), ready for dispatch



Drawing of a section through one of the high-speed shafts

to 45 tons in weight and 19 ft. 10 in. pitch circle diameter. Gears of up to 60 in. in diameter can be shaved at the Power Plant factory, but the firm has built for Harland & Wolff, Ltd., Belfast, a shaving machine which can take 15 ft. gears. They have also supplied Harland & Wolff with a twin of their big double hobbing machine.

PASSENGER LINER "FLANDRE"

(*Continued from page* 329)

fight any outbreak of fire. These hoses can be set in place by being passed through special holes known as "Pugnet holes" to fight ceiling fires in compartments. A foam extinguishing system is fitted for use in the boiler room and various extinguishers are provided to fight fires from electrical equipment and other sources. A special scupper system is installed to discharge water used in fighting fires. Pyrotenax fireproof electric cables have been extensively used.

There are four cargo holds, three forward and one aft of the machinery space, together with tweendecks, have a capacity of about 202,360 cu. ft. In No. 3 hold there are 20,486 cu. ft. of refrigerated tweendecks. For the purpose of handling the cargo there are eight cranes with manoeuvrable jibs, hold Nos. 1 and 2 each being served by two cranes of 5 tons lifting capacity, while No. 3 hold is served by two of 3½ tons lift, and No. 4 hold two cranes of 2½ tons capacity. Cars are stowed in the tweendecks and hatchway spaces and are handled by elevator platforms on vertical rails, so avoiding the possibility of any damage to the vehicles. The stowing of food, luggage and goods in the tweendecks is carried out by four elevator platforms.

The steering gear of the *Flandre* is of the electric-hydraulic type. For mooring operations there are seven capstans each of 16 tons, four being arranged forward and three aft. An anchor windlass is fitted with two cable holders taking 3-in. chains and an anchor of 6½ tons.

The navigational aids installed in the vessel include a radar set with a 12-in. transmitting grid, echo sounder with recorder, direction finder, gyro-compass with repeaters at various stations, a combined course and rudder indicator and an automatic helmsman. There is a long range radio set installed, as well as short wave radiotelephony equipment. In addition, there is a network of telephones. The loud speakers fitted enable concerts and music to be transmitted.

The lifesaving equipment is comprehensive, there being a 44-ft. cutter, two whalers and 13 lifeboats. To alleviate the nuisance of smoke from the funnel settling on the decks, the funnel has been fitted with a special device for blowing the engine exhaust away from the ship.

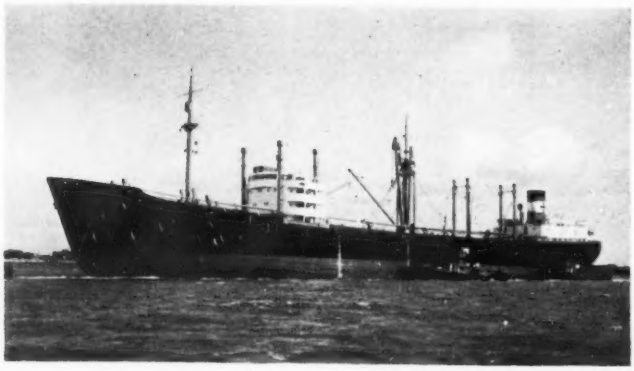
Propelling Machinery

The main machinery of the *Flandre* comprises two sets of Rateau-type turbines by Chantiers de Bretagne. Each of these groups consists of a H.P., M.P. and two L.P. turbines controlling the corresponding shafting through double reduction gearing. The machinery is capable of developing in normal service a total of 36,000 h.p. at 180 r.p.m., the maximum output being 44,000 h.p. Steam is supplied from four boilers of the La Mont type, one of which is a standby unit. These boilers are capable of evaporating 50 tons of steam per hour in normal service. Superheated steam at a temperature of 896 to 905 deg. F. is produced on a basis of 40 tons per hour with the aid of a desuperheater. Automatic burning units are fitted designed for use with the heaviest fuel oil. An air superheater of the Howden Ljundstrom type is fitted.

The generation of electric current of 400 volts, three phase, 50 cycles, is carried out at sea by two turbo-alternators and in port or at sea, in case of breakdown of one of the turbos, by two diesel alternators. Each turbo-alternator is independent of the other and is capable of producing 2,000 kW. The diesel alternators, for emergency use, each have an output of 750 kW. The main operating unit in each diesel set is a two-stroke engine of 1,170 h.p. at 500 r.p.m.

Clark-Sulzer Engines for Great Lakes Vessels

The two vessels recently ordered by Olsen & Ugelstad, of Oslo, from John Crown & Sons, Ltd., for service between Europe and the Great Lakes are to be powered by Sulzer diesel engines built by George Clark (1938), Ltd. The vessels are believed to be the first of their type with diesel propelling machinery to be built in Britain. A service speed of 11¼ knots will be provided by engines of the Clark-Sulzer 5 TG 36 type, having a service rating of 1,500 b.h.p. at 125 r.p.m. Two of these engines will be connected by hydraulic couplings and gearing to a single screw shaft. The auxiliaries will be electrically operated and there will be one oil-fired and one exhaust gas boiler. The vessels will have dimensions of 250 ft. length b.p. and 42 ft. 6 in. breadth moulded. They will have a deadweight of 2,800 tons on a draught of 18 ft. 5 in., while the load draught on Great Lakes service will be 14 ft.

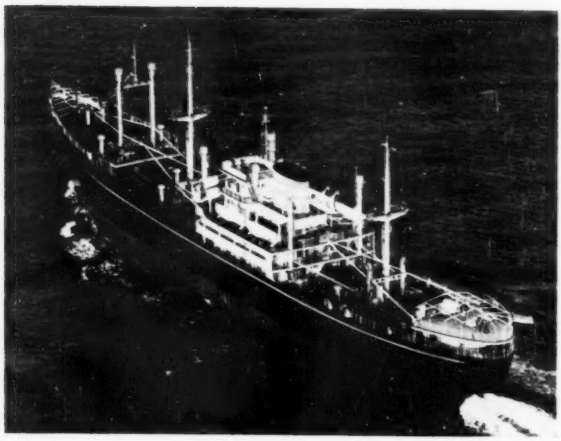


Cargo Motorship "Barenfels"

Of 6,973 tons and 3,988 tons net, the single-screw cargo motorship *Barenfels* has been completed by Aktien-Gesellschaft "Weser" Werk, Seebeck, Bremerhaven, for Deutsche Dampfschiffahrts-Gesellschaft "Hansa", of Bremen. The vessel carries a deadweight of 10,698 tons on a draught of 26 ft. 3 in., while her dimensions are 479 ft. length b.p., 61 ft. ¼ in. breadth, 30 ft. 2¼ in. depth moulded to main deck and 39 ft. 4½ in. depth moulded to shelter deck. A feature of the ship is her 165-tons derrick, which is believed to be the heaviest ship derrick ever constructed on the Continent or in the United Kingdom. The *Barenfels* is propelled by M.A.N. diesel machinery developing 3,600 s.h.p.

French Cargo Vessel from Holland

The cargo motorship *Toroa* has been delivered to Compagnie de Transports Oceaniques, Paris, by Werf de Noord, Alblasserdam. The vessel is of the open shelter-deck type with dimensions of 430 ft. length o.a., 400 ft. b.p., 59 ft. breadth moulded, 25 ft. 9 in. depth moulded to main deck and 35 ft. 9 in. depth moulded to shelter deck. She has a gross tonnage of 4,700 and carries a deadweight of 7,300 tons on a draught of 23 ft. 9 in. For cargo handling purposes there are 14 derricks of 5 tons capacity, two of 10 tons, one of 20 tons and one of 40 tons. All the 16 serving winches are electrically operated, as are the two 1½-tons cranes, anchor windlass, two capstans and steering gear. A fully loaded speed of 15¼ knots is maintained by an 8-cylinder Sulzer diesel engine of the two-stroke single-acting 8 S.D. 72 type supplied by Sulzer Brothers, Ltd., of Winterthur. This engine develops 5,600 b.h.p. at 125 r.p.m.



Danish Cargo Vessel "Jeppesen Maersk"

Built by A S Burmeister & Wain's Maskin-og Skibsbyggeri, Copenhagen, for A. P. Moller, of Copenhagen, the *Jeppesen Maersk* is a single-screw cargo motorship of the open shelterdeck type with forecastle and poop. Her principal dimensions are 445 ft. length b.p., 63 ft. 6 in. breadth, 41 ft. 6 in. depth to upper deck and 31 ft. 6 in. depth to second deck. Of about 6,900 tons gross, she has a draught to summer loadline of 27 ft. 8¼ in. with a corresponding deadweight of 9,625 tons. A 10-cylinder two-stroke single-acting B & W diesel with a normal output of 9,200 b.h.p. at 115 r.p.m., gives a loaded speed of 17¼ knots

NEW CONTRACTS

Yards in Great Britain and Northern Ireland

Shipowners	No. of Ships	Type	Approximate Tonnages: Gross	Approximate Tonnages: Deadweight	Dimensions (ft.)	Speed (knots)	Propelling Machinery	Total h.p.	Engine Builders	Shipbuilders
Bolton S.S. Co.	2	Cargo	—	10,000 (each)	—	13.5	4-cyl. Doxford diesel	—	Hawthorn, Leslie	Smith's Dock
London & Rochester Trading Co.	1	Coaster	—	700	—	—	Diesel	600	—	Clelands (Successors)
London & Rochester Trading Co.	2	Lighters	100 (each)	—	—	—	Kelvin diesel	66 (each)	—	Richard Dunston, Thorne
London & Rochester Trading Co.	1	Lighter	—	—	—	—	Kelvin diesel	—	—	Fairmile Construction Co.
Sudan Govt.	2	River tugs	—	—	140 o.a.	—	Tw.-scr., 6-cyl., 4-str. diesel	648	Ruston & Hornsby	Wm. Denny
Sudan Govt.	1	Waterboat and firefloat	—	—	85 (long)	—	Diesel	138	Norris Henty & Gardners	Wm. Denny
Sudan Govt.	4	Pass. barges	—	—	100 o.a. × 7 × 2.75 (draught)	—	Non-propelled	—	—	Wm. Denny
Sudan Govt.	1	Inspection launch	—	—	56.5 (long)	—	Diesel	72	Norris, Henty & Gardners	Yarrow & Co.
Sudan Govt.	Several	Pass., cargo or cattle	—	—	—	—	Non-propelled	—	—	Yarrow & Co.
Sudan Govt.	3	Vehicle and pass. ferries	—	—	45 (long)	—	Diesel	68	Norris, Henty & Gardners	Rowhedge Ironworks
Wilh. Wilhelmsen, Oslo	1	Cargo liner	—	10,000	—	—	Doxford diesel	—	Barclay, Curle	Chas. Connell
Schlanches Rederi A/S, Bergen	1	Tanker	—	4,000	—	12	Steam	—	—	George Brown & Co. (Marine)
Counties Ship Management Co.	1	Tanker	—	16,300	—	—	5-cyl. Doxford diesel	—	N.E. Marine	Furness S.B.

Commonwealth and Foreign Yards

U.S. Govt.	42	Harbour tugs	285 (each)	—	100 (long)	—	Diesel	1,200 (each)	—	Avondale Marine Ways, Westwego, La. (28); and Higgins, Inc. New Orleans, La (10)
Standard-Vacuum Transportation Co., London	2	Tankers	—	26,500	—	16.75	—	—	—	West Japan Heavy Industries, Nagasaki
Ubersee-Reederei G.m.b.H., Bremen	1	Cargo	700	1,400	—	—	Diesel	—	—	Atlas Werke A.G., Bremen
Lubeck Linie A.G.	1	Cargo	500	—	190.3 × 31.8	—	Diesel	—	—	Schiffs. & Masch. J. G. Hitzler, Lauenburg
Seereederei Frigga A.G., Hamburg	1	Cargo	6,300	10,000	472.5 × 58.58 × 25.9	13	M.A.N. diesel	4,000	—	Nordseewerke, Emden
Zuid Hollandsche Scheepv.-Maats., Rotterdam	2	Coasters	499 (each)	—	—	—	Werkspoor diesel	650 (each)	—	Scheeps. Gebr van Diepen, Waterhuizen
Hollandsche Stoomb. Maats., Amsterdam	1	Coaster	499	—	—	13.5	Werkspoor diesel	1,050	—	E. J. Smit & Zoon's Scheeps., Westerbroek
W. Smid, Groningen	1	Coaster	500	—	—	—	M.A.K. diesel	360	—	Firma A. Apol Scheeps., Wirdum
Norwegian and United States owners	4	Tankers	—	19,000-28,000 (each)	—	—	—	—	—	Hitachi S.B. & E. Co. and the Kawasaki Heavy Industry Co. (2 each)
U.S. Navy	5	Rhine patrol vessels	—	—	—	—	—	—	—	Theodor Hitzler Schiffs. & Masch., Regensburg

LAUNCHES

Yards in Great Britain and Northern Ireland

Date	Shipowners	Ship's Name and/or Yard No.	Type	Approximate Tonnages: Gross	Approximate Tonnages: Deadweight	Dimensions (ft.)	Speed (knots)	Propelling Machinery	Total h.p.	Engine Builders	Shipbuilders
Oct. 19	Crown Agents for Colonies	*No. 1 (262)*	Barge	95	—	—	—	Non-propelled	—	—	White's Shipyard (Southampton)
Oct. 22	Hargreaves (Leeds)	*Ethelwood*	Barge	65	—	61.5 × 15.5 × 7.5	—	Lister diesel	40	—	Richard Dunston, Thorne
Oct. 30	John I. Jacobs & Co.	*Sandalwood*	Tanker	10,300	15,000	—	12.5	4-cyl. Doxford diesel	—	N.E. Marine	Jos. L. Thompson
Oct. 31	Overseas Tankship (U.K.)	*Caltex Tanganyika*	Tanker	8,600	12,000	491 o.a. × 61.75 × 28.29 (draught)	13.75	5-cyl. diesel	5,510	Shipbuilders	Wm. Doxford
Oct. 31	Clan Line	*Clan Macintyre*	Cargo liner	6,600	—	438 (long)	15	6-cyl. Doxford diesel	—	Shipbuilders	John Brown
Oct. 31	Anglo-Saxon	*Velletia* (1805)	Tanker	18,600	28,000	610 b.p. × 80.5 × 45	15	Dble.-red. geared	13,000	Wallsend Slipway &	Swan, Hunter, Wallsend

Commonwealth and Foreign Yards

Oct. 31	Cie. Generale Transatlantique	*Flandre*	Passenger liner	20,500	2,800	597 o.a. and 569 b.p. × 80 × 56	23	Tw.-scr. geared turbine	36,000	Ch. de Bretagne	Atel. et Ch. de France, Dunkirk

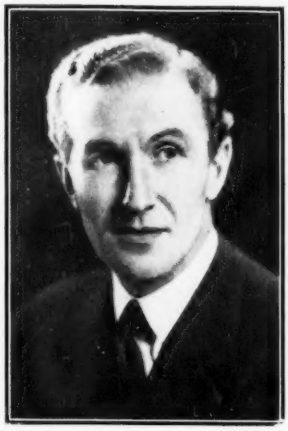
TRIAL TRIPS

Yards in Great Britain and Northern Ireland

Date	Shipowners	Ship's Name and/or Yard No.	Type	Approximate Tonnages: Gross	Approximate Tonnages: Deadweight	Dimensions (ft.)	Speed (knots)	Propelling Machinery	Total h.p	Engine Builders	Shipbuilders
Oct. 29	T. & J. Harrison	*Arbitrator* (791)	Cargo	8,120	10,000	460 o.a. × 59.5 × 37.66	12.5	4-cyl. diesel	—	Shipbuilders	Wm. Doxford
Oct. 29	Stanhope S.S. Co.	*Stanburn* (340)	Cargo	5,575	10,350	462.25 o.a. and 435 b.p. × 59.5 × 38.92	—	4-cyl., 2-str. Doxford diesel	3,300	Hawthorn, Leslie	Burntisland S.B.
Oct. 31	Royal Navy	H.M.S. *Eagle*	Aircraft carrier	36,800 (disp.)		—	—	Quad.-scr. geared turbine	—	—	Harland & Wolff, Belfast
Oct. 31-Nov. 1	Th. Brovig, Farsund	*G. C. Brovig*	Tanker	—	16,000	499 × 68 × 29.83	—	Doxford diesel	—	David Rowan	Wm. Hamilton

LORD LEATHERS has been appointed a member of the Cabinet with the office of Secretary of State for the Co-ordination of Transport, Fuel and Power. Lord Leathers, chairman of William Cory & Son, Ltd., Mann, George & Co., Ltd., and other Cory Group Companies, was Minister of War Transport from 1941 to 1945, and was British representative on the Combined Shipping Adjustment Board during 1942-45. An underwriting member of Lloyd's, he is also a director of the Peninsular & Oriental Steam Navigation Company, British India Steam Navigation Co., Ltd., and other companies

MR. J. S. MACLAY, director of Maclay & McIntyre, Ltd., has been appointed Minister of Transport and Civil Aviation in the new Government. He was a member of the British Merchant Shipping Mission to Washington from 1941 to 1944, being appointed head of the Mission in 1944. He has previously had a seat in Parliament as a National Liberal and Conservative for Montrose Burghs during 1940-50 and for Renfrewshire West since 1950. Mr. Maclay is an underwriting member of Lloyd's and a member of the Baltic Exchange



MARITIME NEWS IN BRIEF

From Correspondents at Home and Overseas

IT HAS been announced by Wm. Cory & Son, Ltd., that as a result of Lord Leathers resigning from the board of directors and from the chairmanship following his appointment as a member of H.M. Government, Mr. F. A. Leathers has been elected chairman of the board, and Mr. Douglas Cory-Wright deputy chairman. The Peninsular & Oriental Steam Navigation Company and the British India Steam Navigation Co., Ltd., have also announced Lord Leathers' resignation from the board.

THE Committee of the Salvage Association, London, has decided with great regret to approve the retirement of the secretary, Mr. R. Edmond, on his reaching the retiring age. Mr. Edmond's retirement will be effective from December 31 next, when he will be succeeded by the present assistant secretary, Mr. S. E. Tomkins. Mr. H. J. Duncan and Mr. C. R. Baldwin are appointed assistant secretaries, with effect from January 1, 1952.

MR. DONALD M. BROWN, who has been purchasing agent for Babcock & Wilcox, Ltd., Renfrew, for many years, has retired. Mr. Brown had served with the firm for 43 years, first in Spain, and latterly as purchasing agent at the head office. He is succeeded as purchasing agent by Mr. J. N. Stewart.

MR. W. H. PURDIE, director of William Doxford & Sons, Ltd., has been elected chairman of the National Association of Marine Enginebuilders for 1951/52. Mr. Ewen H. Smith, director of David Rowan & Co., Ltd., Glasgow, has been elected vice-chairman.

A SERVICE of remembrance will be held on the Baltic Exchange at 10.45 a.m. on Friday. All members of the Exchange and their staffs (including ladies) are welcome. Poppies will be on sale at the entrances to the Exchange.

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THE LARGEST single shipment of motor vehicles from Great Britain to Lobito, consisting of 129 motor cars and chassis, has left this country in the steamship *John Holt*. The shipment, which is destined for Northern Rhodesia, will be carried on its 1,500-miles journey through Portuguese West Africa and the Belgian Congo in wagons of the Benguela Railway. It is expected that delivery will be effected within 30 days of the consignment leaving London.

THE COMPLETION of large extensions at the works of Brookhirst Switchgear, Ltd., has been used by the company to mark its golden jubilee; it actually was founded rather more than 50 years ago by the late Mr. John A. Hirst. The extensions represent an increase of some 45,000 sq. ft. in covered floor area, and include extensions to assembly, test, and inspection departments, a new packing bay and new warehouse, as well as a large social hall.

IN VIEW of the success this year of the summer school on welding organised by the British Welding Research Association, it has been decided to hold another school next year at Ashorne Hill. This time it will be divided into two parts. The first, from July 13 to 20, will be concerned solely with the practical aspects of welding; the second, from July 20 to 25, will be for those interested in design, inspection and manufacturing problems.

DURING the three holiday months of July, August and September, over 1,300,000 passengers were carried by British Railways to and from the Continent via Harwich and via the South Coast ports, and to and from the Channel Islands. This is the largest figure yet recorded, and is about one-third more than during the same period in 1938.

DR. D. G. SOPWITH, acting director, Mechanical Engineering Research, and until recently superintendent of the Engineering Division, National Physical Laboratory, has been appointed Director of Mechanical Engineering Research in succession to the late Dr. G. A. Hankins.

WITH the seasonal close of navigation, the direct service of the Hamburg-Chicago Line to the Great Lakes will be suspended, but regular sailings to St. John, N.B., and Halifax, N.S., will be maintained during the winter months.

THE DEATH has occurred at the age of 71 of Mr. E. A. Wawn, partner in the old-established Sunderland firm of M. Wawn & Son, consulting engineers and propeller manufacturers.

SOME 37 shipping lines are now using "Semastic" tiles for deck and other surfacings on ships.

* * * *

OWING to heavy and continuing increases in operating costs, British lines engaged in the Australia and New Zealand passenger trade have decided that passage money rates, fixed five years ago, will have to be altered. Fares have been increased for all bookings made after November 1. The minimum first-class fare to Sydney has gone up from £110 to £120, and the tourist-class rate from £64 to £70. Other fares have been raised similarly.

MR. E. HOWARD THORNE has been appointed to the board of Lambert Brothers, Ltd. Mr. Thorne, who has been with the company for 29 years, will be concerned chiefly in the management of the company's coal depots abroad and the general merchandise side of the business.

A CONTRACT for the construction of offices for the dock department of the Wallsend Slipway & Engineering Co., Ltd., has been received by Purdie Lumsden & Co., Ltd., Newcastle-on-Tyne. The offices are part of a large development scheme being carried out by the company.

THE LECTURE on "Ships that Serve Ships," to be given by Mr. T. Clark to the Institute of Marine Engineers on November 13, is to be followed by a film illustrating the work of Trinity House.

SUTHERLAND & CO., LTD., Newcastle-upon-Tyne, have sold their vessel *Caithness* to the Westralian Farmers' Transport Company.

SITUATIONS VACANT

CIVIL SERVICE COMMISSION

THERE are vacancies for appointments as Engineer and Ship Surveyors and Nautical Surveyors (Male) in the Marine Survey Service of the Ministry of Transport.

Candidates must be at least 28 years of age on 1st January, 1951.

Candidates for posts of Engineer and Ship Surveyor must (a) possess either (i) an Extra First Class Certificate of Competency as Engineer in the Mercantile Marine or (ii) a First Class Certificate together with a University degree in Engineering or (b) be retired Naval Engineer Officers who have served on a regular engagement and who are in possession of a First Class Certificate of Competency or of Service.

Candidates for posts of Nautical Surveyor must possess an Extra Masters' Certificate of Competency and must have been in command as Master of a foreign-going merchant ship.

London salary scale £900 (at age 30 with small adjustments for new entrants above or below that age) × £25 to £900. Provincial rates are somewhat lower. There are higher posts on the salary scale of £900-£1,150.

Further particulars and forms of application may be obtained by post from the Principal Establishment and Organisation Officer, Ministry of Transport, Room 6029, Berkeley Square House, W.1, or on personal application to any Survey Office of the Ministry of Transport.

The last date on which completed application forms can be received will be the 1st December, 1951, but applicants who apply before this date who appear qualified will be summoned as soon as possible to an interview in London to test both technical ability and personal qualities. No written examination. Successful candidates will be offered appointment shortly after the interview. 11260/b/150/JW.

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